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ARTICLE I.

A SKETCH OF THE MINERALOGICAL HISTORY OF THE STATE OF NEW-YORK.

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[Report to the Agricultural Society, continued from vol. i. p. 452, of *first edition*, and concluded.]

DESCRIPTION OF THE ISLANDS.

1. *Of the Primeval.*

(A.) MANHATTAN, or the iſland compoſing the baſis of the City and County of New-York, extends ſouth-weſtwardly, from King's-Bridge, about ſixteen miles, and is ſeparated from the continent by a ſtrait or channel, called Haerlem-River. This channel conſiſts of ſalt water, and riſes and falls with the tide. The iſland is exceedingly rocky. On its ſouth ſide, almoſt from the mouth of Haerlem-Creek to Bellevue, a diſtance of nearly three miles, the ſhore is compoſed, in many places, of high and large maſſes of ſolid rock; and the ſame kind of material underlays, at different depths, the ſtratum of ſoil. In many places the naked rock riſes above the ſurface of the land, in firm and continuous maſſes.

The general courſe of the rocks is from N. E. to S. W. and their ſtrata have generally not very much declination from the perpendicular. Both in the direction of the large bodies of them, and in the angle which the ſtrata form with the horizon, there is a moſt exact reſemblance with the granitical tracts on the continent already deſcribed.

There is ſo near a ſimilitude alſo in the natural characters and chemical qualities of the rock, with thoſe which have

been enumerated before, that a particular account of the various combinations of quartz, feldſpath, glimmer, ſhoerl, and garnet, would be but a repetition of what has been given in detail, in the preceding part of this report. It may be remarked, however, that the garnets which are found in the rocks of ſome part of Manhattan, are larger than thoſe the Commiſſioner ſaw in any other place, and more regularly cryſtallized. He ſaw alſo ſome exquiſite ſpecimens of ſtellated aſbeſtos; but the largeſt rock of this kind, which was of a roundiſh ſhape, and about ſix feet in diameter, has been buried in the earth, in the progreſs of improvement, between Corlaer's-hook and the city. The rocky foundation of the S. W. extremity of the iſland, beneath where the battery now is, has enabled this expoſed point to reſiſt, ſo remarkably as it has done, the further encroachment of the water, impelled by winds and tides. Thoſe extenſive beds of granite have been covered up, and are now hidden from view by the works of art, which have been erected on and around them.

(B.) Blackwell's Iſland. This is a ſpit or gore of granitical rock, of about one mile long, covered with a good proportion of arable ſoil, lying from E. N. E. to W. S. W. in nearly the narroweſt part of the Sound, between Manhattan and Long Iſlands. The violent and rapid current which runs on both ſides of this iſland, during the ebb and flow of the tide, has waſhed away almoſt every thing oppoſed to it, ſo as to leave, in many places, the mere rock behind. At the eaſt end there is a detached rock of conſiderable ſize, from which the land has been, to a conſiderable diſtance, carried away. And, in like manner, at the weſt end, rocks, emerging above the ſurface, from place to place, ſhew the direction of the granitical ſtrata; and, at the ſame time, give an idea of the alterations heretofore wrought by water, in carrying away the intervening portions of earth. The *Canoe-Rock*, a rock called the *Governor's Table*, and a number of other large rocks, ſtretching along far to the S. W. in deep water, are the remains of what was once, perhaps, continuous land.

(C.) The Mill-Rock. A little picturesque iſland, of a few ſquare rods in extent, abounding in cedars and prickly pears, near the mouth of Haerlem-Creek, is ſo called becauſe it once ſupported a mill, which, it was the projector's intention, ſhould be turned by the force of the tide-water running beſide it. This is chiefly a compact maſs of granite.

(D.) Great Barn-Iſland, or *Parſell's Iſland.* This alſo lies near the mouth of Haerlem-River, and contains land

enough for two ſmall farms. One ſide of it is very rocky, but the other parts are good arable land. Theſe rocks are compoſed of materials ſimilar to the others.

(E. F.) The Brothers. Two ſmall iſlands, lying on the ſouth ſide of the ſhip-channel, near the mouth of Fluſhing-Bay, have hitherto reſiſted the impetuoſity of waves and currents, by reaſon of their rocky ſtructure. Both theſe, and the detached rocks and reefs around them, differ in no material reſpect from the character of the reſt.

(G.) Ryker's Iſland. A little to the eaſtward is an iſland, with banks of conſiderable height on the north ſide, which is by no means ſo rocky as the two laſt mentioned. There is, however, a conſpicuous maſs of granite upon it, and ſeveral ſmaller rocks, ſcattered about. From the looſe and gravelly material of which it conſiſts, its ſides are gradually crumbling down, and waſhing away, notwithſtanding the ſhore is thickly ſpread with rocks and ſtones—the remains of former waſhings, and encroachments of the ſurrounding water.

(H.) Miniford's, or City-Iſland. A ſmall iſland of nearly the ſame conſtruction and qualities as the preceding. A whimſical project was once formed of building a city on it.

(I.) Hart-Iſland. This lies a little to the eaſtward of the laſt-mentioned, and has no memorable difference that a mineralogiſt can diſcern. So named from having been uſed as a park, in former days, for deer.

(K.) Pea-Iſland. A maſs of granite of more than an acre in extent, with ſolitary rocks here and there in its neighbourhood. So called from affording the ſea-pea (piſum maritimum).

(L.) Hurtle-Berry-Iſland. This comprehends ſeveral acres, covered with trees and ſhrubs of various kinds, among which are abundance of hurtle-berry buſhes. Its baſe is of granitical rock, waſhed bare, in ſome places, for ſeveral rods, between high and low water marks. The opportunity of examining its materials, and their compoſition, is excellent. On this account, and becauſe of its curious configuration, this ſpot, though uninhabited, is more worthy of being viſited by the mineralogiſt than any other iſland in the Sound. The various compoſition of the rocks, together with the veins and fiſſures, and the materials with which they are filled, their width, and their turnings and windings, can be viewed here with uncommon advantage. But, on the north ſide, the granitical appearance is ſingularly modified in

one place. It becomes a grey or ſpeckled compoſition, chiefly of quartz and ſhoerl, and is broken, by natural diviſions, into ſomewhat of regular cylindrical maſſes, with flat ſurfaces at each end, like plain joints of baſaltes. There are upward of thirty of them, and ſome are piled in ſeveral tiers, lengthwiſe, upon each other. They form the outermoſt ſide of a ledge; and, by degrees, the quality of the rock alters ſo conſiderably, that, in the ſpace of a few feet, it no longer exhibits the columnar ſhape, but is entirely ſolid. Though the Commiſſioner has viſited this remarkable place more than once, he has unfortunately loſt the memorandum of the exact dimenſions of the joints or columns of this baſalt-like rock. From the beſt of his judgment, on recollection, he thinks they are from two and one half to three feet, or more, in length; and, being without regular angles, are from fifteen to twenty inches in diameter. Several of the iſlands in Suffolk County, near the eaſt end of Long-Iſland, have been omitted in this ſurvey. There are ſeveral ſmall iſlands, and very numerous rocks, lying along the New-York coaſt in Weſtcheſter County, which contain nothing new or memorable for deſcription.

(M.) Long, or Naſſau Iſland. This piece of land, which forms the eaſt and ſouth ſides of the bay and harbour of New-York, extends north-eaſtwardly about 120 miles, and terminates in a fork; the ſhorter extremity of which is called *Oyſter-Pond*, and the longer, *Montauk-Point*. The land is very low, eſpecially on the ſouth ſide, and, of courſe, not viſible from any great diſtance at ſea. The higheſt land on the iſland is called *Harbour-Hill*. Its average breadth is eſtimated at about eight or nine miles. A ridge of hills runs almoſt the whole length of it on the north ſide, and completely divides its waters. The ſtreams have, on this account, much ſhorter courſes toward the Sound than on the ſide next the ocean, and are, conſequently, more rapid and precipitous.

The face of the country, on the one ſide of this elevation, which may be called the *Spine of the Iſland*, is exceedingly different from that on the other. On the north ſide it is variegated, uneven, and very much diverſified with hills and dales; while, on the ſouth, little elſe is diſcovered by the traveller than a flat ſurface, ſloping very gradually away toward the ocean. Stones and rocks are very frequent on the ſide next the continent; but, on the atlantic ſide of the hills, a carriage may be driven many miles without the leaſt impediment from them. Indeed, the tract which lies northward of the

ridge, not only reſembles the adjoining parts of the main land in its face and general appearance, but alſo in its foſſils and mineral productions. It appears to have been ſeparated from the continent, during the lapſe of ages, by the encroachments of the ſalt water.

From a ſurvey of the foſſils in theſe parts of the American coaſt, one becomes convinced that the principal ſhare of them is granitical, *compoſed of the ſame ſorts of materials as the higheſt Alps, Pyrennees, Cáucaſus and Andes, and, like them, deſtitute of metals and petrifactions.*

The occurrence of *no* horizontal ſtrata, and the frequency of vertical layers, led him further to ſuppoſe, *that theſe ſtrata are not ſecondary collections of minerals, but are certainly in a ſtate of primeval arrangement.*

The *ſteatites, amianthus, ſhoerl, feldſpath, mica, garnet, jaſper, ſhiſtus, aſbeſtos* and *quartz*, muſt all be conſidered as *primitive foſſils, and by no means of an alluvial nature.*

What inference remains now to be drawn from this ſtatement of facts, but that the faſhionable opinion of conſidering theſe maritime parts of our country as flats, hove up from the deeps by the ſea, or brought down from the heights by the rivers, ſtands unſupported by reaſon and contradicted by experience?

A more probable opinion is, that Long-Iſland, and the adjacent continent, were, in former days, contiguous, or only ſeparated by a ſmall river, and that the ſtrait which now divides them was formed by ſucceſſive inroads of the ſea, from the eaſtward and weſtward, in the courſe of ages. This conjecture is ſupported by the facts which follow; *to wit.* 1. The foſſil bodies on both ſhores have a near reſemblance. 2. The rocks and iſlands lying between are formed of ſimilar materials. 3. In ſeveral places, particularly at White-Stone and Hell-Gate, the diſtance from land to land is very ſmall. 4. Wherever the ſhore is not compoſed of ſolid rock, there the water continues to make great encroachments, and to cauſe the high banks to tumble down, as is true, not only at Plandome, but at Montauk, Newtown, and elſewhere, at this very day. 5. The rocky piles in the Sound, ſoon to be deſcribed, called Executions and Stepping Stones, and Hurtle-Berry-Iſland, Pea-Iſland, Hart-Iſland, already named, and many more that lie up and down, are ſtrong circumſtances in favour of this opinion: for, from ſeveral of them, all the earthy matter, as far as the higheſt tides can reach, has long ſince been carried away; and, from the reſt, the ſand and gravel continue to be removed

by daily attrition; as is true alſo of the Brothers, Ryker's, Blackwell's, and other iſlands. 6. There is a tradition among that race of men who, previous to the Europeans, poſſeſſed this tract of country, that, at ſome diſtant period, in former times, their anceſtors could ſtep from rock to rock, and croſs this arm of the ſea on foot at Hell-Gate.

On this ſide of the iſland there are ſome ſolitary rocks, or enormous heaps of granite, which are too remarkable to be omitted in this deſcription.

To the eaſtward of the ſtrait called Hell-Gate, all the conſiderable rocks are ſolitary maſſes of granite. Theſe are ſcattered over the upland, and along the ſhores between high and low water marks, and under the ſalt water of the bays and of the Sound. In the latter caſes they are much frequented by fiſhes, and many kinds of theſe animals are caught around them by the hook and line. Some of theſe detached or inſulated rocks are of conſiderable ſize. In the town of North-Hempſtead, not more than a mile and a half from the Commiſſioner's country-houſe, is the largeſt rock of the kind that he has ſeen. It is of a remarkable figure, forming a ſort of irregular ſquare, of the extent of about forty feet on the weſt, ſouth, and eaſt ſides, and of nearly twenty on the north. It lies on the declivity of a hill, and its thickneſs above ground increaſes from ten or twelve feet, as you deſcend, to ſeventeen, or thereabout. The top of the rock, to which he aſcended by a ſhort ladder, is, to a conſiderable extent, pretty nearly level, and ſupports earth enough for a number of plants to grow. Among others he noted a peach-tree, a yerva-mora (bozea), a ſpecies of cactus, a thorn-buſh, an oak and a lilach, beſides ſeveral other perennials and graſſes. It is known, in the records of the town, by the name of the *Mill-Stone Rock*.

Suppoſing the rock to be uniformly thick, which is by no means an improbable ſuppoſition, then forty, the length, multiplied by thirty, the average breadth, gives a ſuperficies of twelve hundred ſquare feet. This number, multiplied by ſeventeen, the ſuppoſed thickneſs, gives *twenty thouſand and four hundred cubic feet*—A vaſt, lump, indeed, of ſolid granite! and lying remote from all mountains and ſtrata, for a diſtance of eight or nine miles at the leaſt.

He has conſidered this rock as a maſs of compact granite; not, indeed, that it has no cracks or fiſſures in it, but becauſe all the pieces of which it is compoſed, and they are not numerous, are well fitted to each other, and ſhew, by their

ſhape and adaptation, that, as they are now *in ſitu*, they were once united into a whole.

There are, in the ſame town, other huge rocks of ſolitary granite, though not ſo regular and large as the one juſt deſcribed. And the well-known ſhoal of *Old Succeſs*, in the Sound, near the mouth of Cow-Bay, has, in its centre, a granite rock, whoſe top is ſometimes bare, when the water around it is fifteen or ſixteen feet deep.

The appearance of things on the ſouth ſide of the Spine, led the Commiſſioner to believe that the foot of thoſe hills was the ancient barrier of the ocean, and that the whole extent of level land between them and the ſea, is a dereliction of the waters. As the north part of Long-Iſland was evidently *primeval*, ſo the ſouth ſide afforded tokens no leſs convincing of its *ſecondary* nature. Its horizontal ſtrata, its ſandy and gravelly quality, and the roundiſh and water-worn ſurfaces of its quartzy pebbles, all lead to ſuch a perſuaſion. The land, beſides, is very bare of vegetable mould, as well as of rocks and ſtones, and the timber is generally of a much ſmaller growth. And, what is well worthy of note, the ſoil is ſo peculiar, that various ſpecies of vegetables grow on it, which are not ſeen on the other ſide of the Spine. This is ſo much the caſe, that the two ſides of the iſland make a ſtrong contraſt. On this ſide alſo, ſhells of marine animals are more frequently met with in digging wells, though it is ſaid that, toward the weſt end of the iſland, the remains of teſtaceous creatures have been found at conſiderable depths, in ſome places, on the north ſide of the ridge.

Between Long-Iſland and the continent there are ſeveral ſhoals, with rocks ſcattered over them, which are, apparently, *ſunken* or waſted iſlands. Theſe remains of what was, probably, in former days, upland of as great height as the neighbouring iſlands, afford ſtrong evidence of the levelling power of the waves. One of theſe ſhallow places, whoſe rocks are frequently bare at low water, lies off the extremity of Cow-Neck, and occupies ſeveral acres near almoſt the middle of the Sound. From the damage ſometimes done to veſſels, by this ſhoal and its rocks, they are called *Executions*. Another ſandy ſpot of many acres, with ſeveral large rocks appearing here and there above the little water which covers it, ſtretches far toward the main channel from the bottom of Great-Neck. Theſe rocks are called the *Stepping Stones*. Such of the iſlands enumerated as have not a rocky baſis,

will, probably, in the progreſs of things, be waſhed down, and undergo a ſimilar ſubmerſion.

Some facts remain to be mentioned, which will tend toward an explanation of the rapid currents and dangerous navigation of *Hell-Gate*. This is a ſtrait, one of whoſe ſides is formed by *Long-Iſland*, and the other by *Parſell's* and *Manhattan*. Between the two latter, Haerlem-Creek empties itſelf into Hell-Gate. It has been mentioned already, that the great maſſes of rocky matter run from N. E. to S. W. There is ſo great a quantity of ſolid granite hereabout, that both the ſhores, and the intervening rocks and reefs, almoſt altogether conſiſt of it. Such a compact body of it impedes, on the Long-Iſland ſide, the direct flow of the water of the Sound, in a north-eaſtwardly and ſouth-weſtwardly direction, ſo completely, that the current is forced to take a ſhort and ſudden turn round the point of Parſell's Iſland. The change of direction which the water is obliged to take is north-weſtwardly, or nearly at a right angle with the ridges and ſtrata of rocks which formerly connected the two iſlands. And ſuch has been its impetuous and irreſiſtible force, that the dams of ſolid rock, which nature had conſtructed acroſs, have been broken down and carried away, and nothing but their ruins are now to be ſeen. The broken remains of theſe ſtrata of granite are viſible, as they extend N. E. from Long-Iſland, and S. W. from Parſell's Iſland, partly above, and partly under water. Where the ſtrength of the current has thrown the fragments of the ſtrata irregularly and confuſedly about, the foaming and agitation they occaſion in the water, as it runs among and over them, has given riſe to the whimſical names of the *Pot*, the *Frying-Pan*, and the *Grid-Iron*, which the boatmen apply to theſe rude and diſordered piles of ſunken rocks. Where the force of the water has not been ſufficient to break down a whole ſtratum, but a part thereof ſtill braves its power, a judgment may be formed, from the parts which are left, what the original conſtitution was. The *Hog's-Back*, *Hallet's Point-Reef*, the *Mill-Rock*, the *Middle-Reef*, and the *South-Rock*, are plain and inſtructive monuments of the ancient arrangement. They are portions of ſtrata remaining, after all the reſt had been ſwept away by the tides. After having thus forced its way through and acroſs theſe mounds of granite for about one quarter of a mile, the current turns, and purſues its former courſe, not any longer acroſs the ſtrata, but in a direction nearly parallel with them.

(N.) Staten-Iſland. Evidently a parcel of land, of much the ſame quality with the north ſide of Long-Iſland, left between the currents of the *Narrows*, ſeparating it from Long-Iſland, on the one ſide, and the *Kills*, dividing it from New-Jerſey, on the other.

(O. P. Q.) Governor's, *Bedlow's*, and *Ellis's Iſlands*, are three ſmall bodies of earth and ſand left in the Bay of New-York, not memorable for any thing mineralogical.

(R.) Salſbury-Iſland. A maſs of granite, ſituated near the *Horſe-Race*, between the Donderberg and Fort-Montgomery, on the weſt ſide of Hudſon's River, a little north of the entrance of the Highlands.

(S.) Guanos-Hook-Iſland. Another pile of granite, on the weſt ſide of the river, almoſt oppoſite the Sugar-Loaf-Mountain in the Highlands.

(T.) Conſtitution-Iſland. A ſolid collection of granite, lying eaſt of the fortreſs of Weſt-Point, in the Highlands.

(U.) Pollepel's Iſland. This is little more than a huge maſs of granite, lying on the eaſt ſide of the channel of Hudſon's River, between the village of New-Cornwall and the town of Fiſh-Kill. The reader will recollect that this one is of the northernmoſt places where granite is found, as was mentioned on a former occaſion.

(V.) Eſopus-Iſland lies in Hudſon's River, a few leagues above the village of Poughkeepſie. It conſiſts chiefly of ſhiſtus, and quarries of ſlate have been worked on it. Of the ſame material conſiſt many ſmall iſlands not far below the village of Tivoli.

(W.) Coeyman's Iſland. A maſs of ſhiſtic rock, which lies on the weſt ſide of the channel in Hudſon's River, juſt below the village of Coeyman's. When viſited by the Commiſſioner, there were many traces of perſons having been engaged in digging for money, according to a notion, prevalent along an extenſive portion of the American coaſt, of treaſure having been formerly hidden by the pirates. In the courſe of his reſearches, the Commiſſioner, in ſeveral other places, has found large holes in the earth, and ſome of them very recent, formed by the fooliſh and credulous money-diggers.

2. *Of the Secondary.*

The principal of theſe iſlands, beſides the ſouth ſide of Long-Iſland already mentioned, are the *beaches* and *marſhes* which lie between it and the Atlantic Ocean, and the *low*

iſlands frequent in Hudſon's River, between the mouth of the Katt's-Kill and that of the Mohawk-River.

(A.) The Marſhes. On the ſhallows and flats of the bays, where there is but little current, but merely the ſwell and receſs of the tides, certain plants delight to grow, particularly *ſedge*, and, with their roots, form a thick matting at the bottom. The mud and ſand, which had before been moveable, now become more fixed and adheſive. The decaying roots and leaves of the plants are detained on the ſpot, and become a layer of vegetable matter for the ſeeds to ſprout and take root in. Theſe growing to maturity, and dying in their turn, make a new ſtratum for a freſh crop; and theſe, again, furniſh an additional quantity of ſoil for another growth. To theſe are added whatever of floating or feculent matter the water may drift or drop upon the marſh: and this proceſs goes on until the new iſland riſes ſo much above the level of common high tide, that the roots of the ſedge can attract no more nouriſhment from the ſalt water:—it then ſtops. The higheſt, therefore, of theſe marſhy tracts, is not much greater than the difference between high and low water marks, or ſeven feet and a half. (The Commiſſioner, indeed, never ſaw any ſo high). They are very numerous, and ſome of them of large extent. They are ſcattered along almoſt the whole length of the iſland. The wholeſome and nutritious quality of the ſedge they yield, makes it of great value and eager demand to the farmers, who carry, annually, thouſands of loads of it, in waggons, quite to the north ſide of Long-Iſland, in ſome places a diſtance of fifteen, or even twenty miles, to feed their neat cattle upon during the winter.

(B.) The Beaches. By the force of waters draining from the land, on one part, and by the impulſe of the ocean on the other, not only are *bars* and *flats* formed below, but ſometimes the land and gravel are impelled between them with ſo much violence and fury, that they riſe to a conſiderable height above the level of the ſpring-tides. The iſlands, hove up in this manner, are commonly long and narrow, with a break or inlet, from place to place, through them. They conſiſt almoſt entirely of the ſand of quartz, worn very fine by the attrition of the waves, and rounded pebbles of the ſame material. To theſe are added the ſhells of various marine animals. The ſand of theſe beaches has been carried a great diſtance, for the manufacture of glaſs. The beaches ſtretch along about as far as the marſhes; it being generally obſervable, that wherever the former checks the ſurges of the ſea,

the latter ſpring up in the calm and even water behind them. *Hog-Iſland* and *Coney-Iſland* belong to the beaches.

(C.) The Overſlaghs and low Iſlands. The water of the Hudſon becomes more difficult to be navigated, as you aſcend from Katt's-Kill towards its ſource. A large tract of the country, adjoining that part of the river, is of the *alluvial* kind before deſcribed. And the deſcending rills, freſhets and ſhowers, bring down the ſand and gravel, from the hills and plains above, faſter than the current of the river can deliver them to the ocean. Hence large bodies of theſe *ſecondary* materials collect where the ſtream has too little force to carry them away, and form ſhoals, or, as they are called, *overſlaghs*, beneath the water, and low, level, and ſandy iſlands a little above it.

The principal flats or overflaghs are, 1. *Coeyman's*, a little above a landing called Baltimore. 2. *Winne's Bar*, juſt above Caſtleton: and, 3. The *Great Overſlagh*, about three miles below the City of Albany.

The iſlands adjoining the *overſlaghs* are evidently *ſecondary*. They conſiſt of ſand, gravel, loam, and other *alluvial* materials. Their ſtrata are horizontal. They are ſo little above the level of the river, that the floods of the ſpring, cauſed by the melting ſnow in the upper country, lay them under water: and they ſometimes enlarge, and then again diminiſh, according as the current of the river accumulates new materials around them, or forces the old away. Their number is between twenty and thirty, as he believes, and many of them are not publicly diſtinguiſhed by appropriate names. None of them are the permanent reſidence of men, though ſeveral are valuable appendages to the neighbouring farms.

Albany, October 20, 1796.

Note to be referred to the Deſcription of the Whin-Rocks, *on the weſt ſide of the North-River, after line* 24 *of p.* 301, *vol.* i. *firſt edition.*

On a viſit to that ridge of rocks, ſince the publication of the former part of this Report, the Commiſſioner has ſeen a figured maſs of it, having five ſides and five angles. This pillar of baſaltes lies on the margin of the water, in the place to which it tumbled when it was detached from its connection with the main body of whin above. He is ſatisfied now of the reſemblance of this cliff to ſome of the precipices in the King's-Park, near Edinburgh, and to the rocks on the eaſt ſide of the caſtle of Dunbarton, in Scotland.

Errata.

In the former part of this Report, concerning the ſtreams whoſe falls in the Blue Mountains were deſcribed, inſtead of "Kaat's-Kill" read *Kader's-Kill.*

In p. 448, 14th line from the bottom, for "aninal" read *annual.*

ARTICLE II.

A SKETCH *of the* HISTORY *of the* DISEASES *of the* STATE *of* DELAWARE: *Communicated in a Letter from Dr.* JOHN VAUGHAN, *of Wilmington, to Dr.* MILLER.

No. II.

Dear Sir,

HAVING concluded my firſt number with intermitting fevers, and the month of September, I now proceed to October, and the article of remittent fever. Why remittent fevers are more frequent in the latter part of the ſeaſon, is a queſtion which I refer to older heads to determine. For unleſs it be imputed to a concentration of miaſmata, or higher degree of the cauſe of intermittent fevers, I muſt confeſs myſelf ignorant of its nature. If the ſame effluvia may produce dyſentery and intermittent fevers, they may produce remittent fevers, when modified by maturity, and, alſo, remittents of various degrees of violence, as, I doubt not, will be manifeſted in the ſequel.

Our remittents bear but a ſmall proportion in the general ſcale of fevers; perhaps not more than *one* to *thirty* of intermittents. Nature, though diverſified in her gifts, is ſtill republican in preſerving a degree of general equality. The concomitant evils are moſtly parallel. Though we are annually harraſſed with *agues*, we are not much troubled with her more formidable relations. The fall of 1798, however, forms an exception: and, preſuming that a hiſtory of the diſeaſe of that ſeaſon will anſwer the preſent purpoſe, without a minute detail of our common form of this diſeaſe, as it is only different in degree, I ſhall confine this eſſay principally to that ſubject.

The firſt caſe of remittent fever that occurred was in July. The diſeaſe aſſumed no regular or diſtinct type: the remiſſions were obſcure and the debility great. When I firſt ſaw the patient, which was on the eighth day, the tongue was parched and dark-coloured, blood oozed from the noſe, and the ſurface of the body was variegated by purple blotches. By the liberal uſe of wine, and other tonics, this patient recovered.

The ſecond caſe occurred in October, in a boy aged ſix years. I was called on the eighth day, and found him iraſci-

ble, without fever—tongue black—pulſe feeble—ſurface yellow—a laborious breathing, with frequent ſighing—a perpetual vomiting of granulated black matter, and blood oozing from the lips and gums. In this caſe little was attempted, and ſtill leſs effected. He died comatoſe in a few hours.

About ten days preceding the attack of this child, a woman had died in the ſame houſe, and, the family ſaid, with ſimilar ſymptoms. This circumſtance made me ſuſpicious of contagion: but the parents affirmed that neither of them had been expoſed to diſeaſe. They lived in a ſequeſtered place, adjacent to an extenſive marſh; and the occurrence of numerous other caſes, in different parts of the neighbourhood, ſoon convinced me that it was an indigenous diſeaſe.

General Characters of the Diſeaſe.

It ſometimes attacked ſuddenly with rigor, but frequently was preceded by languor and nauſea of two or three days duration. The violence of the caſe was announced by the manner of attack. If the attack was ſudden, the caſe was deſperate, and *vice verſa*.

The fever was ſometimes obſcure—generally a remiſſion morning and evening; and it partook, in ſome meaſure, of the tertian type.

The pulſe was generally full and quick, not always tenſe, and blood drawn ſhewed little inflammatory buff, unleſs there were local affections.

The head was generally affected with pain, particularly in the forehead, and the eyes with inflammation and jaundice. An icteritious colour of the ſkin ſoon ſucceeded that of the eyes.

The bowels were generally coſtive in the commencement—ſtomach irritable—vomiting often intervened on the third or fourth day. The criſis uſually happened on the fifth, ſeventh, or eleventh day. If protracted beyond the fifth, the breathing became oppreſſive, with cardialgia, great anxiety of the precordia, and frequent ſighing. If it paſſed the ſeventh, it frequently reached on towards a putrid fever, ſo called; the teeth became incruſted with a black matter—a vomiting of chocolate-coloured matter came on—the tongue became parched and fiſſured—blood oozed from the lips and gums—the heat retreated from the extremities, and coma and death ſoon cloſed the tragic ſcene. But if it lingered on to the eleventh day, without theſe urgent ſymptoms, it became an ordinary typhus fever.

Method of Cure.

From the affinity which this diſeaſe evinced to the yellow fever, I had recourſe to the ſame mode of treatment. In all caſes where the febrile heat was conſiderable, pulſe full, and head or breaſt much affected, I employed the lancet *pro re nata*, began the uſe of mercury in various forms, and produced a ſalivation as ſoon as poſſible. If the pulſe was reduced, without a relief of the local affections, bliſters always relieved them; but as ſoon as the gums were touched with the mercury, the conqueſt was complete, and nothing left to be done, but to adopt a reſtorative regimen.

I cautiouſly avoided purgatives, for two reaſons: 1. They would hurry off the calomel through the bowels, and prevent its affecting the glandular ſyſtem: and, 2. I have always found briſk purgatives increaſe the counter-determination to the bowels, in our autumnal fevers; and, in two caſes, produce ſudden death. I remonſtrated againſt their uſe, but without effect. Spontaneous diarrhœas are alſo generally obſtinate, and frequently fatal. I therefore ſubſtituted active injections.

In two caſes of black vomit, I found brandy grog the beſt anti-emetic.

The warm bath was a powerful auxiliary. It promotes perſpiration, obviates a congeſtion of the biliary ducts, facilitates the operation of mercury, and diffuſes the excitement over the ſyſtem. The moſt convenient mode of applying it, in advanced caſes, is by wrapping the patient in a blanket wrung out of warm water. By this means we avoid the fatigue of immerſion, which is often an important conſideration in the laſt ſtage of fevers.

The prohibition of purgatives in this diſeaſe will, no doubt, be criticiſed by ſome of the faculty. I, however, wiſh them equal ſucceſs in the uſe of them. I did not loſe a ſingle patient to whom I was called in the beginning, but witneſſed the death of ſeveral who were treated with antimonials and purgatives.

The intermittents of this fall were alſo unuſually obſtinate, and varied in their form; frequently alternating double tertians, appearing like two diſeaſes running different courſes, and worſe and better every other day. The intermiſſions were of ſhort duration, and they not unfrequently degenerated into typhus fevers.

It is a ſingular fact, that all our febrile diſeaſes partake of

the tertian type. They are alſo of the ſynochoid genus. Some of your able correſpondents may ſolve thoſe problems: I am content with relating facts.

Yours in ſincerity,

JOHN VAUGHAN.

Wilmington, January 31, 1800.

P. S. The cynanche trachealis has been very general here this winter, in children; moſtly confined to infants on the breaſt. The old Sampſon *calomel*, was my general and ſucceſsful remedy, given ſo as to preſerve a laxative ſtate of the bowels. The ſeneka was alſo given as an auxiliary; but the ſyrup of ſquills, exhibited in ſuch quantities as to produce permanent nauſea, and occaſional ejection, was preferable. Bliſters were applied, though to little purpoſe. Cataplaſms of *onions* were equally, if not more ſerviceable.

A few years ſince I diſſected a child that died of this diſeaſe, and found a firm ſemidiaphanous membrane attached to the baſe of the epiglottis, of an inch and a half in length, forming a valve in expiration.

For the purpoſe of determining whether this membrane was the product of increaſed ſecretion, or inflammatory action, I ſubmitted it to a variety of experiments, of which the following are the reſults.

1. That the membrane formed by the cynanche trachealis is ſoluble in ſulphuric acid, and cauſtic alkaline ley.

2. That it is not ſoluble in water, as is obſerved by Dr. Home.

3. Alſo, that coagulable lymph is ſoluble in the ſulphuric acid, and cauſtic alkaline ley.

4. That, on the addition of water to the ſolution of the membraneous matter, or lymph, a partial precipitation is produced; and the addition of alkali to the acid menſtruum produced a complete precipitation, and *vice verſa*.

Laſtly. From comparing theſe reſults with the experiments of the late Mr. Charles Darwin on mucaginous matter, I think we may juſtly infer, that the membrane is not mucaginous; and, *e converſo*, that it is formed of coagulable lymph, exuded from the tracheal veſſels, and ſimilar to thoſe exudations found on inflamed viſcera. The more fluid particles exuded paſs off in expiration, leaving the lymph firm, glutinous and membranous.

Mr. Darwin, however, tells us, that coagulable lymph is not ſoluble in the vitriolic acid. On this account I procured

the blood of different perſons, and treated it both by *affuſion* and *trituration*, with the ſame reſult. We can ſcarcely ſuppoſe, that there is ſuch an important phyſical difference between Scottiſh and American blood; therefore one of us muſt be miſtaken. My experiments were ſubmitted to ſeveral medical gentlemen, who can atteſt the fact.

In addition to thoſe teſts of identity of the membrane and coagulable lymph, may be added the appearances of the internal ſurface of the trachea. The blood-veſſels were diſtended, as if injected, and the intermediate ſpaces were of a *bluiſh* colour. J. V.

ARTICLE III.

MASONIC RELICS *of Dr.* BROWN, *preſerved by Dr.* LAWRENCE, *of* NEWTOWN. *From the original Manuſcript in the Poſſeſſion of Dr.* MITCHILL. *Elucidating what is ſaid of his Life and Character by Dr.* BEDDOES, *p.* 85 *and* 89.

THE paper contains the order of buſineſs, and the toaſts given one evening in his Latin Lodge of the *Roman Eagle*.

Vota. (Toaſts).

1. Floreat Aquila Romana.
2. Regi et Arti. (The craft).
3. Magno apud Scotos magiſtro, et circulis (lodges) ei parentibus.
4. ——— Americanos, &c.
5. ——— Anglos, &c.
6. ——— Hibernos, &c.
7. Munera in magno noſtro circulo (grand lodge) gerentibus.
8. Probis viris et pulchris puellis.
9. Mortalium ærumnæ pellantur.
10. Venus, Ceres, et Bacchus, nunquam deſint probis Ædificatoribus (good Maſons).
11. Bonorum ædificatorum aratrum procedat.
12. Salus eum plenâ Crumenâ.
13. Verum gaudium merentibus.
14. Libertas liberis animis.

15. Foveamus ulnis quas cordi eſt amare.

16. Ædificatoribus et ædificatorum proli, et omnibus, quæ vel foventur vel foveri cupiunt ab ædificatoribus.

17. Provideatur quibus non proviſum eſt.

Sacerdos benedicat, debitâ omnium bonorum datori, veneratione.

This being done, and the maſter of the lodge (Brown himſelf) not being preſent, a glaſs was filled to his name, and drank with the enſuing ſentiment:

Cariſſimo, ſpectatiſſimo, ingenioſiſſimo Aquilæ Romanæ Magiſtro;—cujus ſub auſpiciis, bonis cum hominibus, Aquila pacem et cultum, non arma et cædem præ ſe ferens, mirantibus Britannis ſublata eſt, et ſub cujus curâ floret et florebit;—et cujus ingenio, ex arte conjecturali et parùm ſibì omnibus ſuìs partibus conſtante, medicina ad veram ſcientiam redacta eſt;—quique ſolus medicinæ magiſter, ſuos amat et a ſuis amatur:—Omnia proſpera ſuccedant *magiſtræ noſtræ* (Mrs. Brown) et proli ejus.

After which the following note was read, intimating that he was not preſent on account of impriſonment, and apologizing to his diſciples, many of whom were members of his lodge, why he had failed to meet them, and give them lectures.

"Perſecutione pluſquam Diocleſianâ, cariſſimi diſcipuli! veſ-
"ter magiſter et preceptor ad carcerem compulſus ſum. Pen-
"dens a meis diſcipulis, opto et ſpero veſtrum præſidium; voſ-
"que non gravaturos, ſolitis horis elementorum medicinæ in-
"ventorem etiam in carcere viſere et præcepta medica accipere.
"Quo facto, omnia deinde mihi et vobis proſpere cedant; et ut
"par eſt, ſemper vos, ut cerebro meo natos (children of my
"brain) agnoſcam foveboque."

They went and heard him in jail!

ARTICLE IV.

OBSERVATIONS *on the* DISEASE *commonly called* YELLOW-WATER *in* HORSES: *In a Letter from the late Dr.* F. B. SAYRE *to Dr.* BARTON.

My good Sir,

A PAINFUL and long-protracted indiſpoſition has prevented my attending, as early as my wiſhes prompted, to a requeſt you ſome time ſince made; and, I fear, from the time already elapſed, you may be led to expect ſomething more conſiderable on this ſubject than my opportunities of information or obſervation will realize.

The ſummer of the year 1793 was the firſt in which the yellow-water was obſerved in that part of Jerſey where I then reſided. The diſtrict where the diſeaſe was moſt frequent as well as fatal, is one of the moſt highly cultivated countries in Jerſey. The ſurface of the ſoil is generally uneven, but there are no high hills. The arable land is a light loam, with rather an over proportion of ſand. The quantity of meadow is large, compared with the upland. The meadows are what are called bottom-lands, by which is meant ſwamps, which, by ditching, &c. have been rendered dry enough for the cultivation of graſs. The ſoil of theſe meadows is generally a very black vegetable mould of ſome feet in depth, reſting upon a ſtratum of blue clay; but many of the meadows have a pretty thick ſtratum of iron ore, which, when expoſed to the air, ſoon acquires a hardneſs ſufficient for the purpoſes of building, and is uſed for the foundations of houſes.—I do not remember to have heard of this diſeaſe being introduced by chills. Loſs of appetite, incapacity for labour, coſtiveneſs, heavineſs of the eyes, and great heat, were the uſual ſymptoms: the urine alſo was remarkably high coloured; a cough, more or leſs ſevere, frequently attended; and, in ſeveral which I ſaw, there was an evident enlargement of the belly and limbs. The blood, when drawn, and ſuffered to cool, was extremely buffy, exhibiting a covering of coagulable lymph, in many inſtances more than an inch thick. The diſeaſe was uniformly believed to be contagious; and, therefore, the farmers aſſiduouſly ſeparated the diſordered from the ſound. Many of thoſe, I obſerved, had large glandular ſwellings about

the throat, which ſuppurated; and ſuch, I think, were more apt to recover.—It was obſerved that thoſe horſes which were ſtabled uniformly fared worſt; on which account it was the practice to turn the ſick into fields appropriated to them alone, for fear of infection.

Bleeding, purging, and roweling, were the remedies in common uſe; but, I believe, the two former were ſeldom carried to the extent that was neceſſary, and the laſt was probably of little conſequence. The purge commonly made uſe of was crude antimony. One of my neighbours, who had loſt ſeveral horſes in the diſeaſe, having a pair of valuable carriage horſes ſeized with it, by my requeſt, gave them calomel very largely. They both recovered, though very ſlowly, and were unfit for ſervice ſeveral months. I know of but one diſſection of a ſubject that died of this diſeaſe, and that I did not ſee. It was performed in a very rude manner, by a farmer, whoſe property the horſe was. He informed me the contents of the abdomen had, in many places, grown together; that there were ſeveral pints of water in the belly; and that the liver was larger and blacker than uſual.

During the prevalence of this diſeaſe, I had a fine horſe attacked with what is called ſtaggers, but which I believed to be a variety of the yellow-water—the force of the diſeaſe being directed to the brain. A number of gentlemen who ſaw the animal pronounced him irrecoverable, and I therefore determined to hazard an experiment, the ſucceſs of which ſurprized and diſappointed every body. About eleven o'clock of the day on which I firſt diſcovered the illneſs, and after the horſe had been pronounced paſt all hope of recovery, I bled him in the jugular vein, and meaſured the blood as it flowed. The intention was to bleed *ad deliquium*. I drew a large tin cup, holding conſiderably more than a pint, thirteen times full, before the horſe fell. The laſt cupful I preſerved. It was extremely buffy. After lying about half an hour, the horſe got up, and ſeemed better than before the bleeding; but, towards evening, the ſtaggering and blindneſs returned: I, therefore, again opened the vein, and bled till fainting enſued, which happened when almoſt ſeven cupfuls had been diſcharged. The next morning he ſeemed conſiderably better, and I gave a drachm of calomel, with three drachms of jalap, which acted powerfully: but, about noon, the ſtaggering again came on, and I once more bled about the ſame quantity as at the ſecond bleeding. In the evening the horſe began to nibble a little graſs, for the firſt time ſince his ill-

neſs; and, the next day, appeared to have no diſeaſe. I kept him a few days, to ſee that the attack was not repeated, and then ſent him to paſture a few weeks. He was returned to me well, and, I believe, continues ſo to this day.

I am, with reſpect,
Yours, &c.
FRANCIS BOWES SAYRE.

ARTICLE V.

OBSERVATIONS *on the* YELLOW FEVER: *Communicated in a Letter from Dr.* FELIX PASCALIS *to Dr.* MITCHILL, *dated Philadelphia, Nov.* 11, 1799.

Sir,

WITH pleaſure I perceive that the public opinion, concerning the origin of the yellow fever, is very much changed; owing chiefly to the viſible influence of the ſtate of the weather on the late epidemic, which was, accordingly, often extinguiſhed, and often revived again. This phenomenon ſtruck me ſo much, that I ſeriouſly contemplated whether all the cauſes concurring to produce the exhalations could not be enumerated; ſo that, their reſpective *action* being known, and calculated upon given proportions, we might draw up tables for exhalations as we do for the common meteorological obſervations.

My attempt was not altogether unſucceſsful. It appeared obvious to me that four cauſes were neceſſary to the formation of deleterious or ſeptic gaſes, and for their floating in our atmoſphere. Theſe are independently of other chemical cauſes, in materials expoſed to putrid fermentation; and I reckon they are *heat*, *moiſture*, *winds*, and *decreaſe* of the days. Without entering now into any chemical arguments in proof of this aſſertion, while they are obvious enough to you, I ſhall only obſerve, that when gaſes are formed, and, once a day at leaſt, diſengaged, through ſufficient *heat*, they will become concentrated and deleterious in inverſe ratio of the decreaſe of the days; or, in other words, in proportion to all thoſe circumſtances of cool nights, morning and evening dews, abſence of light, fogs, &c. which are oppoſed either to the ſolution of theſe gaſes in the atmoſphere, or which fix them in the orbit where we breathe;

and, at laſt, which knead them, as it were, with the moiſture and aqueous vapours, which are daily increaſing.* Theſe firſt ideas ſeemed to be convincing enough; but ſtill more ſo, after having aſſigned certain gradations and ſeries to each of thoſe cauſes, in order that I could apply them to daily obſervations, which I carried on during the whole month of September. So far as the number of new caſes of the fever came every day to my knowledge, I found that they were pretty much in proportion to the aforeſaid cauſes which promote exhalations, and the prevalence of ſeptic gaſes in the atmoſphere. Yet, I muſt confeſs, that not much preciſion could be obtained, as no correct account of the new caſes was publiſhed. I am not yet ſatisfied of the beſt means for aſcertaining the gradations of moiſture which ſometimes reſults from the ground after rain, ſometimes from the winds. The reſults of the hygrometer cannot be applied to theſe obſervations, becauſe the formation of gaſes cannot be equally promoted by aſcending and by deſcending moiſture. I hope I may be able to preſent you a ſpecimen of an application of the four above-mentioned cauſes of exhalations to the meteorological obſervations of the preſent and former years, and, likewiſe, to the degrees of the epidemic which we have endured: notwithſtanding, pleaſe to remark, that in the year 1798, on the 11th of September, 127 new caſes were reported by the Board of Health, as appears by the *Philadelphia Gazette*; and 100 on the 1ſt of October. In theſe two deplorable inſtances of the univerſality of the epidemic, it may be ſeen by the exiſting meteorological tables, that the *heat* had been as high as 78 and 71 deg. and even higher, during the few preceding days; that the *moiſture* muſt have been very great, owing to heavy rains a few days before; that the *winds* had been ſo gentle or calm, on the W. N. W. and S. W. as to render the weather clear for five ſucceſſive days, and, conſequently, to promote exhalations. In fine, the then *decreaſing days* had produced morning and evening dews, which have been alſo remarked. All theſe circumſtances are included within four or five preceding days. If, now, we obſerve that all theſe new caſes, then reported to the Board of Health, and afterwards pointed out and publiſhed, could not be referred to the ſame day in which they were ſeen by phyſicians; that the greater number of them had been either taken ſick two or

* The dew bringing down with it, as it falls, peſtilential matter enough to poiſon the conſtitutions of men in a ſingle night. (Remarks on manures, by Profeſſor S. L. Mitchill. Med. Repoſ. vol. i. p. 38, firſt edit.)

three days before, or had been acted upon by the deleterious gaſes ſufficiently to produce the effects ſome time after, we muſt conclude, that ſo great a number of ſick, in a deſerted town, was a fatal proof of highly noxious and concentrated exhalations exiſting in our atmoſphere, agreeably to the four promoting cauſes. In the laſt prevalence, the fever was almoſt always confined to certain low parts of the town and ſuburbs: the number of caſes were but few, owing to repeated changes, to long N. E. winds, to frequent drizzles, rains, cloudy and cool weather; yet, in two inſtances, in the month of September, I have obſerved the ſame cauſes, and the ſame effects, in proportion, though in a very ſmall degree.

Thus, Sir, we may have *atmizological* tables to aſcertain the preſence of peſtilential or ſeptic gaſes in the orbit where we breathe; and when we ſee that we are ſurrounded with materials for putrid fermentation, what further doubt can remain in ſupport of the doctrine of importation? This word, as you juſtly obſerve, is a "*mercantile term*, technically underſtood by thoſe who have commercial modes of thinking;" and, I add, Sir, that, under their influence, too many people, unaware of the laws of nature, would readily circumſcribe her neceſſary operations within certain latitudes, juſt as natural produce to certain ſoils, and manufactures to certain nations.

I here ſubjoin ſeveral queſtions, which, I believe, ſhould all be anſwered *negatively*, by any philoſopher or phyſician, before he would, with conſiſtency, adhere to the doctrine of importation.*

1. What is the nature or chemical analyſis of gaſes deleterious to animal life?

2. Is there any malignant or peſtilential fever which is not produced by a deleterious gas externally received or internally formed?

* Profeſſor Mitchill has proved to the world what are the ſources, combinations, and venomous effects, of ſepton (azote). The identical nature of our epidemic, in different years and places, proclaims the truth of the diſcovery, and I adhere to the doctrine. But the field of chemical inquiries is not exhauſted. As there are other kinds of malignant and peſtilential fevers, we muſt, probably, acknowledge other kinds of deleterious gaſes. What is that bluiſh, inflamed meteor of the deſert, called the ſimoom? What is that other peſtiferous wind of the occidental coaſt of Africa, called, I believe, the harmattan? What is it emitted by the Grotto del Cano? What variety of combinations muſt take place with the ambient elements, with the latent heat, with the unknown acids, and with the ſolutions of primitive earths? and from ſo many different fermenting ſources, to which future reſearches will trace all the different kinds of plagues in the world.

3. Are there not as many different ſorts and degrees of malignant and peſtilential fevers as there muſt be various ſorts and actions of venomous gaſes?

4. If certain materials in putrid fermentation, and certain combinations of their conſtituent principles breed, malignant diſorders, what objection is there againſt believing, that the ſame materials, and the ſame combinations, produced the yellow fever in the Iſland of Hippocrates, in the French fleet from Siam, in the Weſt-India Iſlands, on the coaſts of Mexico, and in North-America?

5. If the putrid materials which produce the plague in the Levant were neceſſarily to be imported from one place into another, to create in the latter a ſimilar diſorder, what difference would remain between the doctrine of the domeſtic origin, and that of the importation?

6. Do we find, in hiſtorical records, ſufficient proof, that a fever, called the plague, had been ſucceſſively imported into all populous towns of Europe; that every where it was identically the ſame diſorder; and that, in every inſtance, it was evidently traced to the ſame ſource? And, finally,

7. What doctrine muſt be derived from thoſe of jails, camps, crowded hoſpital ſhips, marſhy places, &c. being the natural ſources of certain malignant and peſtilential fevers?

An anſwer to each of theſe queſtions, from enlightened and unprejudiced minds, would better evince our proofs of the domeſtic origin, in almoſt all inſtances of prevailing peſtilential fevers. I will even venture to ſay, that the memorable peſtilences of many celebrated towns of Europe, were not all traced to the Aſiatic ſource, nor that they were identically the ſame diſorder. In my opinion, Sir, many were yellow fever, as well as what Hoffman calls anomalous malignant fevers—the offspring of local putrid ſources, and of floating exhalations.

I have attended, this year, to a few obſervations on the nature and treatment of the yellow fever. The firſt is that of the total or gradual ceſſation of organical irritability which the deleterious or ſeptic gas produces. To a power which, in a great meaſure, deſtroys the excitability, and thus deprives the organs of their reſpective functions, though the neceſſary ſtimuli would be applied, we can eaſily aſcribe thoſe ſymptoms, peculiar to the yellow fever, of ſo little pain, of ſuſpended thoughts, of ſtupid or dull countenance, of erroneous ſenſations of hunger, and of deliberate reſolution to dreſs, walk, and exerciſe, contraſting with the moſt deplorable ſtate

of animal putrefaction, and even with the agonies of death. Few cases are seen with continued inflammatory symptoms; and when these take place (in the beginning only), they prove the re-action of the existing irritability of certain parts on those which have already lost it. It is more than probable, that the liver, always found, by dissection, to be of a nankeen colour, is the first of the viscera deprived of its excitability: of course, an immense column of blood is repelled from, and forcibly distributed into, the abdominal vessels; and these are the cause of the first tumultuous effects experienced in their respective regions. Then the stomach is convulsed, either by the turgescency of the *vasa brevia*, or by torrents of bile poured into the duodenum, in consequence of the contraction of the liver; for contraction of soft parts is always effected, if circulation in their vessels is but feeble.

I thought I found proofs of this first subversion in several fortunate cases, and happy moments, when an innocent, but stimulant remedy, having restored so much of the lost irritability, the patient immediately recovered from the most alarming state, and retained no symptoms whatever of what is called *acrid or corrupted bile, poisonous or caustic juices, and contaminated blood.* It will appear to others, that the *sedative* operation of septic gases extends from the heart to all the vessels and muscles. Indeed, if it was so, we might also understand why a feeble, red suffusion, is perceived on all the parts of the body, until it is changed and replaced by the yellowness. In fine, one or the other supposition, or both together, will explain the regurgitation of the blood in cavities, where it forms black matter, or the muscular relaxation which sets it loose to produce fatal hæmorrhages. In several dissections, in fact, I have seen that the parts from which it was set loose were black, and that it had assumed that colour. Every where it distended the vessels, even in the lungs. But a still more striking observation is that of Mr. Jacobs, a young and distinguished anatomist in this university (Pennsylvania), who has minutely traced the greater influx of that fluid to its gravitation, and the fulness of blood-vessels to their declivity, relative to the situation of the body. The succeeding yellowness must, therefore, result from the stagnation of some blood in the capillaries, which, by want of muscular irritability, cannot be expelled, secreted nor renewed: and, as we see that stagnation of the blood, in ecchymosis, always, or more or less, effects a jaundice in their contiguous parts: also, stagnation of that fluid, in the capillaries, must produce a general

jaundice in the yellow fever. This aſſertion is ſupported by another obſervation. Were it true that the bile is infuſed from its reſervoirs into the vena cava, or abſorbed by and through the lymphatics, the inmoſt receſſes of the circulation would then receive it ſimultaneouſly, by a neceſſarily regular diſtribution. Contrarily to that effect, Sir, irregular yellow ſpots, contraſting with florid redneſs of contiguous parts, if I am not miſtaken, are the ſure marks of the laſt ſtage of the yellow fever.

This little ſketch of mine ſhould now require ſome proofs *à priori*, in fact, why deleterious gaſes, whether nitrous, hydrogenous, or carbonic, &c. have a ſedative power on animal irritability. I ſay they have, becauſe deaths from ſuffocation or *aſphixiation* do not leave any ſenſible effects of diſorganization; and becauſe the experiments of Meſſrs. Fontana, Carminati and others, have evinced, that animals, expoſed to fixed air, have loſt their irritability, and that their muſcles were no more ſenſible to thoſe ſtimuli by which they ought to have been contracted. Fourcroy has himſelf aſcertained the fact, that the heart, that ſtrongeſt muſcle, will loſe all its irritability by the effect of certain poiſons, and by what he calls *fluides mephitiques*. It may be objected, that as ſudden death is the natural effect of being expoſed to concentrated deleterious gaſes, it is not likely that they would create fevers of a lengthy ſeries of ſymptoms, and of differently marked ſtages. Why ſo, Sir, if theſe gaſes, expanded and diluted in the atmoſphere, can but partly exerciſe their ſedative power on one or another organ, and if they operate like a *ſlow aſphixiation?* Do we not ſee a ſimilar ſucceſſion of febrile ſymptoms, of different ſtages, forming an acute diſeaſe in bodies poiſoned by the bite of certain inſects, ſnakes and vipers? I have it from good authority, that, in Martinique, the bite of a ſnake has, in ſeveral inſtances, produced ſymptoms ſimilar to the malady of Siam, or yellow fever.

Profuſe bleeding, in the treatment of this epidemic, has been again preſcribed by ſeveral eminent phyſicians, and the ſucceſs of this remedy has been evinced by remarkable cures. It is, in fact, the moſt rational, becauſe a rapid circulation, when animal excitability is impaired or weakened, muſt neceſſarily promote the corruption of the blood. This is the reaſon why patients, in that diſorder, emit a ſtrong ammoniacal effluvium particularly when their ſkin is dry, and which is diſengaged in proportion to the heat of their bed and of their room. It is alſo propelled from the inmoſt receſſes of circulation, as ſoon

as proper remedies are exhibited to raiſe the excitability, and promote the ſecretion of the capillaries.

I am not ſatisfied that other remedies poſſeſs any direct or ſpecific power in the yellow fever, beſides what is familiar in correct medical practice. I employ calomel, in moderate doſes, as a draſtic, and as an admirable evacuant of the alimentary canal, and of the whole frame. In it we ought inceſſantly to diffuſe the action of ſtill more ſtimulating medicines, to keep up or to renew the expiring irritability of the heart and other viſcera. There is no diſorder, I believe, in which violent medicines can be adminiſtered with ſo little danger, and with ſo frequent ſucceſs. Profeſſor Ruſh informed me, ſome time ago, that he had given, to a young patient, four times the uſual doſe of tartar-emetic, without producing any other effect than a gentle and ſalutary evacuation of the bowels. This would be incomprehenſible to any body unacquainted with the ceſſation of irritability, or with the ſedative power of an active poiſon. This is not the firſt inſtance in which that phyſician ſtrove hard for the good of the patient left to his care, and for the honour of ſcience.

Had I not, perhaps, already exceeded the limits aſſigned to a ſingle correſpondent, I would ſubjoin further obſervations on the method of ſalivating, and on the queſtion of the contagious quality of the yellow fever. I apprehend that the former is ſtill ſubject to great objections; and I fear that, in the latter, we do not well underſtand each other. But I will trouble you with another letter on theſe intereſting ſubjects.

I read the pamphlet you mentioned to me, a copy of which was given by the Secretary of State. Indeed, my curioſity received very little ſatisfaction, particularly in what Mr. Cathalan has been pleaſed to call, *An anſwer of the Phyſicians of Montpellier and of Marſeilles*. The few phyſicians who have ſigned thoſe pieces, and who probably have never ſeen the yellow fever, nor read any correct account of its ravages in this part of the world, could not be adequate to the taſk of giving any better inſtructions than the faculty of Philadelphia and New-York. The very name of the yellow fever was abſolutely unknown in France, and ſo much ſo, that theſe gentlemen, when obſerving what different characters have been remarked in peſtilential fevers, and in the yellow fever, have referred themſelves to old Engliſh authors, omitting two of their more recent writers, and eminent phyſicians, Meſſrs. Pouppé Deſportes and Dazille, who have reſided in Hiſpaniola, and profeſſedly treated of the ſame fever, but under

the name of *Maladie de Siam.* They have been alſo unaware that the American plague was identically what the French call *La Matelotte*, well deſcribed in the Treatiſe of the *Maladies des Gens de Mer.* I think, however, that their enumeration of the documents they would wiſh to have received is remarkably accurate. Their anſwer to the firſt queſtion, on the beſt preventative diet and regimen, is, in many reſpects, applicable to the people of this climate. Their method of treatment is ſurely widely different from that which experience has ſhewn to be the beſt in theſe parts, and in ſuch a fever, though it may be very good for malignant fevers, under a climate famous for the lively influence, and *exceſs of irritability*, which it diffuſes in the living body. After all, if I take the liberty to juſtify theſe few individuals from the reproach of appearing to have retrograded a whole century, it is becauſe I preſume their experience has ſufficiently convinced them, that their *antiquated ideas* are yet beſt adapted to the peaceable enjoyment of life, and of ſcientifical acquirements, which inteſtine diſcords and horrid wars have inceſſantly interrupted.

I remain, Sir,
With reſpect and affectionate ſentiments,
Yours, &c.

FELIX PASCALIS.

ARTICLE VI.

DESCRIPTION *of a* CABINET *of* COINS *and* MEDALS, ANCIENT *and* MODERN. *By* JOHN C. KUNZE, *S. S. T. D. and Senior of the Lutheran Clergy in the State of New-York; in a Letter to Dr.* MITCHILL, *dated March* 19, 1800.

Dear Sir,

WITH pleaſure I comply with your requeſt, to give you a ſhort deſcription of the little cabinet of coins in my poſſeſſion. It would be the extravagance of curioſity, bordering on the luſt of the eyes, had I made this collection only for my own two eyes. I can therefore have nothing

againſt its publication, provided it is well remembered, that I do not attach any idea of greatneſs to it. Againſt ſuch a ſuppoſition revolts my own conſciouſneſs, that I am not quite ſo ignorant of the ingredients of a good cabinet: for though I have not ſeen many, I am not without the literary means of forming a juſt idea of ſuch a thing. But great and ſmall being relative terms, permit me to ſay, it is a large one in New-York, and to continue this language till I ſee a more extenſive one in this place. At any rate, the foundation for a good one is laid. If the heir to my library, of which I conſider it as an appendant, has not a good and extenſive one, when he comes to my age, I committed an error of judgment in making my will.

I have placed my coins on little mahogany boards, fitted for their reception by a turner; but many are yet looſe in a cheſt. They are, as uſual, divided into gold, ſilver, and braſs.

The golden board proves obſtinate to prolification, for reaſons which may be obvious to you. I have ſown thirty pieces on that ground, and they will not multiply. Yet moſt of the gentlemen who hitherto deigned the little collection worthy of their view, were more pleaſed with this board than with all the reſt, particularly after I had aſſured them, that with them I was not able to buy a pound of butter in our market. This I did ſometimes to check their expatiating on ſeeing me have ſo much money, whilſt I, at the ſame time, repeated in my heart that old ſigh, *O tempora! O mores!* I have a penny of ſilver from Charles I. which does not cover the top of my little finger, and it is worth more than my largeſt gold piece, which weighs eighteen penny-weight.

In this board is a piece of Ferdinand and Iſabella Cathol. with their faces; one of Charles XI. of Sweden. The reſt are more modern, of different nations, as Pruſſia, Saxony, England, Portugal, &c. not our own eagles, half and quarter eagles, omitted. A few are medals of fine workmanſhip, and judicious emblems; one repreſenting the city of Ratiſbon. All of no great value, except that of the maſter of our Columbus.

In my ſilver boards there are fifty-three of dollar ſize, and thirteen of half-dollar ſize.

The copper boards contain fifty of the dollar ſize, and likewiſe thirteen of that of half a dollar.

The ſilver pieces of a ſmaller ſize amount to three hundred and thirty-four, and the copper of the ſame deſcription to four hundred and twelve.

My ſilver boards contain only twenty-ſix of high antiquity; and the copper boards, in large braſs, eighteen, and in ſmall braſs, twenty.

OF THE SILVER COINS.

Board 1ſt contains, beſides the twenty-ſix mentioned, a few moderns. Among thoſe of antiquity is one with the word triumviri, and the prow of a ſhip, which is on the moſt ancient Roman coins, pointing at Janus, who arrived in Italy by ſea. A piece with the Pythia ſitting on the trevet. One with the inſcription, Cai. Jul. Cæſaris divi patris Filius Auguſtus. One with, victoria Auguſti; and, on the reverſe, imperator Caes. Auguſtus Coſs. iiii. of conſequence, that ſtruck in memory of his Actium-victory, which gave him the ſupreme power. The image of the emperor is very expreſſive and clear. Others are of different emperors and kings. Thoſe of Alexander Severus are of baſe metal. Pinkerton aſſerts that he began to ſtrike ſuch money. Three are of his wife, in confirmation of hiſtory, which ſays that ſhe meddled much with the government of the State. Several are of Hadrian, one of Galienus, of the baſeſt metal. One of Marcus Aurelius, and another of his deteſtable conſort Fauſtina. One of Domitian, whoſe copper coins are common, but thoſe of ſilver very rare. Here is likewiſe an Otho, and one of Trajan, with optimus princeps; and, on the reverſe, rex Parthar. which belongs to the moſt valuable.

Board 2d. Fifteen pieces of a dollar ſize; among which is a Daniſh piece of 1697, with the images of Frederick, hereditary prince, and Louiſa of Mecklenburg, his ſpouſe; on the reverſe, a genius with a child, and the inſcription, Felix Danorum genius; under it, Chriſtianus born 1697. One, very large and thick, of Frederick III. with eighteen coats of arms. One of George William, Duke of Brunſwick, of the year 1567. Another of Frederick Ulrich, of the ſame dukedom: on the reverſe, a wild man, with a tree in his hand, and the year 1616. A Dutch one of 1650. One of the ſame kind and country of 1771. It is a curious contraſt with reſpect to the appearance of the ſilver. All ſilver, preſerved a long time in Holland, looks like lead, on account of the humid exhalations of that country. One of Louis XIV. of 1694. One of Maria Thereſia, of 1763, with a very expreſſive image of her. A large piece of Peru and Potoſi, bearing the inſcription of Charles II. This is of a metal

called electrum, gold mixed with ſilver. A fine medal of Frederick II. Landgrave of Heſſia, with a repreſentation of the city of Franckenberg, and the mines in its vicinity. One of Frederick, Margrave of Anſpach, who is repreſented in military dreſs on horſeback. A medal repreſenting the jubilee of the reformation, celebrated in the year 1717, with the city of Augſburg, and ſeveral other things. A Saxonian dollar, with the preſent elector.

Board 3d contains fifteen other pieces of the ſame ſize, among which is a Saxonian piece, with the image of John Frederick on one ſide, and George, Duke of Saxony, on the other, with the year 1535. Another of the ſame country, of John, George and Auguſt Chriſtian, with the year 1592, with their images. Another of that country, of 1598, with the inſcription of John Caſimire and John Erneſt. The former was of the Albertinian, and the latter of the Erneſtinian line. A Dutch piece of 1576. A Swiſs piece of 1621, with a bear, and the inſcription, civitas Sangallenſis. A Brunſwick piece of the year 1696. Of Saxony another, of the year 1542, with Mauritius, Duke of Saxony. One of Maria Thereſia, repreſenting her dominions in Flanders. One of the preſent King of Naples, of 1794. One of Guſtavus III. of Sweden, with his image, of 1776. One of the Emperor Ferdinand III. on the reverſe, Reſpublica Nurembergenſis, of 1631. A Spaniſh piece of Phil. II. of the year 1591. A medal repreſenting Neptune, with the inſcription, halcionibus ſubductis, of the year 1597, from the Senate of Amſterdam. A piece repreſenting the mines of Holzapfel, from Charles Louis, Prince of Anhalt-Shoumburg. A Bavarian dollar of 1772.

Board 4th contains the reſt of ſilver pieces of a dollar ſize, except the Engliſh. There is a fine Dutch piece of 1794. Some French crowns. One with the image of the unfortunate Louis XVI. and another without it; both of 1793. One of Ferdinand II. Emperor of Germany, of 1690. A Straſbourg piece of the year 1694. An old Spaniſh dollar, of a quadrangular figure.

Board 5th conſiſts of thoſe in ſilver of the half-dollar ſize. Here I only obſerve one of John V. of Portugal. One of the City of Aaken, with the inſcription (expreſſive of its rivalſhip with Frankfurth), urbs regalis, regni ſedes prima regum ſedes principalis, locus coronationis Cæſareæ, urbs Aquenſis. The Emperor was formerly crowned at Aaken; but, at preſent, this is done at Frankfurth, the place of election,

But Frankfurth muſt, after every coronation, give a reverſe to this imperial city, that the privilege belongs to Aaken. A fine piece of Louis XV. of France, of the year 1754, with an inſcription rather idolatrous—fulget ab aſpectu. A piece of Lubeck, of 1549. One of Portugal, with Maria I. and Peter III. A Swediſh piece of Adolph Frederick, of 1763. One of Frederick William, late King of Pruſſia, of 1787. A Jewiſh ſhekel in ſilver. Though I believe, with Mr. Pinkerton, in his Eſſay on Medals, that no genuine one is to be had, I cannot coincide with him in the opinion, that it is a diſgrace to any cabinet to have one, nor in his emphatically ſtiling the Jewiſh nation a barbarous one. The piece gives, undoubtedly, an exact repreſentation of the ancient ſhekels.

Board 6th contains twenty-four pieces. One of Charles VI. Emperor of Germany—though I beg leave to obſerve here, that I never heard of an Emperor of Germany before I came to England and America. Theſe princes are called the Roman Emperors; and although they are extremely poor as ſuch, having not more than twenty-one feudal tenures near Rome, yet their power and wealth in Germany are likewiſe not much more than nominal. Other pieces are of Bavaria, the Palatinate, Hanaù, Brunſwick, Bareuth, Heſſia, Saxon-Gotha, Trier, Mainz; others of Holland and Denmark.

Board 7th, containing thirty-one, has a papal piece of Benedict XIV. with the reverſe of St. Petrus apoſtolus. Another of 1740, inſcribed, illuminet corda noſtra, the Holy Ghoſt, and ſede vacante. A Ruſſian one of Catharine II. of 1769. One of the laſt Saxonian King of Poland, ſtruck in the year of his death, 1763. A Ruſſian from the Empreſs Elizabeth, of 1761. Another papal of Benedict XIV. with the inſcription, tota pulchra es, and a repreſentation of the church. Some of the Emperor Leopold, of 1664, 1661. A papal one of Clemens XII. on the reverſe, ſacroſanctæ Baſilicæ Lateranæ poſſeſſio 1733. The reſt are Dutch—of Wirtemberg, Bamberg, Bavaria, Heneberg, Heſſia, Swiſs, Daniſh, Auſtrian, Spaniſh, French. One of George I. where the reverſe gives an account of his birth, elevation to the electorate, to the Britiſh kingdom, and of his death.

Board 8th contains ſixty-one pieces, among which are four of Maſſachuſetts, of 1652, all of different ſizes. Three Turkiſh, very thick, of fine ſilver, of different ſizes. An Arabian one—a medal on the peace of Ryſwick. Another

Arabian, with the year of the Hegira, 1187. Another with the number 632 moſt curious. A piece of Sigiſmund Auguſt, King of Poland, of 1557. A piece of Loretto, with the inſcription, civitas virginis. Beſides Pruſſian, Straſburg, an old French piece of Henry III.

Board 9th contains fifty-one pieces, among which I mention only a medal on rural pleaſure, in very fine ſilver, and Pruſſian and Saxonian groſhes, ſtruck before, during and after the ſeven years war. The Saxonian one, ſtruck during the war, looks entirely black; yet I remember very well how often I had to buy a breakfaſt with it. One ſtruck by the Elector of Saxony, as proviſor of the empire—a true rarity. Beſides them, there are, on this board, pieces of many biſhops, and ſeveral imperial ones, of Leopold, Charles VI. Maria Thereſia, &c. One of George I. is of very fine ſilver. Thoſe of the Britiſh kings, in theſe boards, are Hanoverian pieces.

Board 10th contains thirty-five pieces, moſtly Swediſh and Daniſh. One of Charles XII. Some of Lubeck, Hamburgh, Holland.

Board 11th, containing forty-three pieces, conſiſts, for the moſt part, of French and Spaniſh. One is of Charles II. of Spain, of the year 1674. One of Charles V. or, in Spain, I.—a great rarity, but much defaced.

Board 12th contains forty-ſeven pieces, among which is one with the inſcription, jubilæum ſecundum eccleſiæ Lutheranæ, 1717, with verbum Domini manet in æternum, and the name Ernſt Ludwig, Landgrav. Haſſiæ. Another, with the inſcription, an Heller, yet of fine ſilver, with the name of the place, Frankfurth. It is a piece of the money thrown among the people at the coronation day. Another jubilee-piece, with a very exact likeneſs of Luther. A papal piece of Clemens XII. with the inſcription, in cibos pauperum. A fine piece of Stolberg, with an elk. A very old Portugal piece, a ſubject yet of future ſcrutiny.

Board 13th contains, at preſent, only twenty-two pieces, among which are, a Swediſh dollar from Guſtavus of Sweden, of the year 1543. A fine ſilver medal, on Chriſt giving the keys of heaven to Peter (papal). Another, of the ſame fineneſs, repreſenting the Lord's Supper, with all the words of the inſtitution on the reverſe (a Proteſtant piece). A medal on the coronation of Joſeph II. as King of the Romans, of the year 1764. A curious quadrangular piece, ſtamped 8. groſhen; and, on the reverſe, Minda obſeſſa. A

piece of Louis XVI. for the colony of Cayenne. A medal with his likeneſs. A Saxonian piece of the year 1710. One of the Emperor Joſeph I. of 1708. A fine Marien-groſhen of 1626. Another of 1682.

Board 14th contains my whole collection of Engliſh pieces in ſilver, amounting, as yet, only to forty-ſix.

The largeſt, above the dollar ſize, repreſents George II. with a tree, a ſun, and an Indian, with the words, Let us look up to the Moſt High, who bleſſed our fathers with peace. A crown of Charles II. One of Queen Ann. One of William III.—Of half dollar ſize the following: Of Charles II. James II. William III. William and Mary, with the two images. A medal on Maria, with her very expreſſive image, and the motto on the reverſe—O Dea certe. A medal on Queen Ann's inauguration, with the inſcription, Vicem gerit illa tonantis (a deteſtable ſound to an American ear), with April 23, 1702.—Of a ſmaller ſize are the following: Four of Elizabeth; one of 1573, one of 1594—one expreſſing her face very clearly. Several of Charles I. one a very rare penny, valued at £ 10. One of Henry VIII. One of another Henry, with civitas Cantor. What Henry? is yet an object of inveſtigation. One of Edward VI. with his face. Some ancient Scot's pieces. One with Jacobus and villa Edenburg (not Edinburgh). One of Philip and Maria, King and Queen of England, of the moſt conſummate rarity. The reſt are of Charles II. Ann, William, William and Mary, the three Georges, James II. ſome of the moſt minute ſort. One Iriſh piece, ſtamped, heart of oak.

OF THE COPPER COINS.

Board 1ſt contains eighteen pieces of high antiquity, and twelve others.—Of the firſt ſort are many common, but ſome extremely rare and precious. Nero's, Domitian's and Veſpaſian's, are common: but one of Germanicus, ſon of Nero Druſus and Antonia, Pinkerton values at £ 15 ſterling. There is one of Julia Mammaea, mother of Alexander Severus. One, in Greek, of Hadrian with Antinous, worth £ 3 ſterl. The reſt in this board, not belonging to the above-mentioned eighteen, are Ruſſian and Venetian, with St. Mark, and two kinds of Swediſh, of 1557 and 1732.

Board 2d contains twenty-five pieces of high antiquity, and twenty-ſix of a more modern date. Several, but all different, of Conſtantine the Great. One of Probus. One of Nume-

rianus. One of Conſtantius, with the reverſe, gloria exercitus. One of Conſtans. One of Licinius, &c.

Among the others is the whole ſet of dollars, in the ſhape of ſmall pennies, ſtruck by Charles XII. King of Sweden, with Jupiter, Mars, Neptune, &c. from the year 1715 to 1719; for which impoſition Baron de Goerz loſt his head. The moſt rare among them is that ſtamped Poppei. The reſt are Ruſſian and Spaniſh. Two of Philip III. and two of Philip IV. Portugueſe, French, and ſome medals.

Board 3d and 4th contain, of a dollar ſize, the whole ſeries of Britiſh kings, from the conqueſt to George II. inclusive, ſtruck in the year 1740, by Dacier, a native of Geneva, upon the fineſt copper, reſembling the moſt exact countenances of the kings, and admired by every ſpectator on account of the workmanſhip.

Board 5th contains ſix pieces of a dollar-ſize, and twenty of a leſſer. Four Ruſſian kopekes, of different years. A medal repreſenting the battle of Roſbach. One of Frederick the Great, of Pruſſia. One of George II. A piece of James II. of 1689. Another with the not very democratic inſcription, Floreat rex, pereat plebs. A Spaniſh piece of 1611, &c.

Board 6th contains eight of a dollar ſize, five of half a dollar, and thirteen of a leſſer ſize, moſtly medals. One repreſents Admiral Boſcawen taking Cape-Breton, with the fortreſs of Louiſbourg. One Admiral Vernon's naval victory. Another William Pitt. One Mr. George Whitefield.—Of the ſmaller ſize, I only notice Queen Charlotte, Queen Caroline of George II. Admiral Vernon (another), Commodore Brown. One on the alliance of England and Pruſſia, with the faces of the two kings. A Sicilian piece of 1500. One with the faces of the King of Pruſſia and Prince Ferdinand. A Chineſe penny.

Board 7th contains twenty-four pieces, among which are the Marquis of Granby. The mother of King George III. with the motto, on the reverſe, A much injured victim. King George and Caroline. George III. and Charlotte. A coronation piece of both. One of the Duke, another of the Dutcheſs of Glouceſter. One with Roſa Americana. Another with Voce populi. Iſle of Man pieces with the three legs. William and Maria, with Vita poſt fata ſuperſles. Some of James II. with Nemo me impune laceſſit—the trueſt royal falſehood.

Board 8th contains twenty-four pieces, among which is one of Louis XIII. Two Arabian pieces of different ſizes.

Some very old Ruſſian and Spaniſh—the Spaniſh all of the ſixteenth century.

Board 9th contains forty-eight pieces, among which are, one of the Prince of Wales, with the uſual motto, Ich dien. Two of Louis XIII. A China penny. One of Charles II. of Spain. A Sicilian piece of Charles II. A medal of the Prince of Orange. A much valued penny of Ann, flat on one ſide. A much valued piece, with Carolus a Carolo. A Portugueſe penny of Peter II. with Moderato ſplendeat uſu. Some very curious, which I am not yet able to explain.

Board 10th contains forty-eight pieces, among which are pennies, hellers, kreuzers and ſtubers, moſtly of all provinces of Germany. One of Frederick, of clear copper, yet ſtamped with Moneta argentea. Such was this monarch's power. One repreſenting the proſperity of the Engliſh church.

One hundred and twelve other copper pieces are not yet placed on boards. They contain Engliſh, Scotch and Iriſh pennies, marks and medals of various mottos, and ſome of exquiſite workmanſhip.

My duplicates I have in a particular cheſt, from which every ſpectator is permitted to take what he pleaſes, by replacing each with a coin, of any value, which is not yet in the collection.

I am, with ſentiments of high eſteem,
Sir, yours,

JOHN C. KUNZE.

ARTICLE VII.

On the DISEASE *called the* LAKE-FEVER *of the* WESTERN COUNTIES *of the* STATE *of* NEW-YORK. *In a Letter from* JOHN W. WATKINS, *Eſq. of Tioga, to Dr.* MITCHILL, *dated January* 1, 1800.

Dear Sir,

I HOPE the account which I tranſmit you of a fever that attacked my ſettlement, and the weſtern counties of this State, in the year 1795, the ſame year that it ravaged the city of New-York, will be acceptable to you. For more correctly determining its origin, I have prefaced it with a deſcription of the lake and adjacent country.

The Seneka Lake is a water of forty miles in length, and from two to five miles in width, remarkably clear, and of great depth: in ſome places a line of one hundred fathoms has not found bottom. The ſtreams that fall into it are neither numerous nor large. It is never known to freeze, except at the north end, where the water is ſhallow, and the bottom a fine ſand. It is, in ſummer, very cold, and ſteams and vapours ariſe from it in cold winter weather. When firſt immerſed into as a bath, it gives a very ſenſible and ſharp ſhock, but preſently becomes delightfully pleaſant. As it mixes well with ſoap for waſhing, it can be but very little impregnated with any acid. The rocks which form its banks lie in horizontal ſtrata, of different thickneſs, of a hard, brittle ſtone, of a ſhiſtlic or ſlaty nature, which, when put into the fire, flies in it pieces, with a conſiderable exploſion, like oyſter ſhells. Many quarries of lime-ſtone are found in its vicinity.

At the ſouth end of this lake, in the direction of the lake, is an extenſive valley, of about ſix miles long and one wide, bounded by high hills, from which ſeveral ſmall ſtreams of water proceed, and which, no doubt, by the earth brought down with them, have made this encroachment on the ancient limits of the lake. For the firſt three miles of this valley, during the greater part of the months of April and May, a large proportion of it is covered with water, occaſioned by the lake being, at this ſeaſon, at its higheſt elevation. As the lake ſubſides, the water gradually dries off, leaving a very rich ſoil, covered with aquatic plants and animals. Theſe not being able to reſiſt the autumnal heats, ſucceſſively die. The nauſeous exhalations from them are ſtrongeſt, and only to be obſerved at a diſtance, very early in the morning.

At this end of the Seneca Lake I formed my ſettlement; and, in the year 1795, had about twenty men employed, collected from different places. They were plentifully ſupplied with liquor and proviſions, excepting vegetables. As the heat of the ſeaſon increaſed, they ſucceſſively grew ſick. In ſome inſtances they lingered before the height of the fever, in others the attack was ſudden and ſevere. The eyes of the men were inflamed, and very yellow, which was a ſure ſymptom of the approaching complaint. The face, at firſt, was very much flushed, and they complained of exceſſive pains in the back, head, and limbs, and of great oppreſſion in the breaſt, with a very ſick ſtomach. The ſkin was very dry, and the bowels affected with an obſtinate coſtiveneſs. As ſoon as the latter was removed, and perſpiration brought on, the ſick man was

ſeldom long confined. On one man, repeated clyſters and portions of calomel had no effect, and no kinds of teas could procure perſpiration. His complaint grew ſo inveterate, that he became covered with black ſpots, was occaſionally ſeized with violent convulſions, inſomuch that the ſtrongeſt men could not keep him in bed; and, although kept clean, was exceſſively offenſive. In this ſituation I cauſed him to be put into a large caſk of warm water. The firſt immerſion produced a plentiful perſpiration; and, after the ſecond, the medicine he had in him operated. The man recovered.—This diſorder produced a univerſal yellowneſs over the whole body, and is termed, in that country, the LAKE-FEVER. During the ſeaſon I have been ſpeaking of, it was very prevalent over that region, particularly in the neighbourhood of ponds and marſhy grounds. It has been leſs rife ſince that time: and although it ſo violently attacked thoſe people that ſeaſon, which was remarkably warm and ſultry, I have known but two caſes of a ſimilar fever in that neighbourhood ſince. It is evidently occaſioned by the poiſonous ſeptic gas, emitted by putrefying animal and vegetable ſubſtances of every kind, abounding in a country in a ſtate of nature.

The clearing of the land, aided by the ſtrata of calcareous earth in the ſoil, will effectually, I hope, prevent the return of this diſtemper, ſo like the yellow fever of your ſea-ports.

With reſpect,

I am your humble ſervant,

JOHN W. WATKINS.

ARTICLE VIII.

SINGULAR CASE *of* DROPSY: *Communicated in a Letter from Dr.* CHARLES SMITH, *of New-Brunſwick, New-Jerſey, to Dr.* J. R. B. RODGERS, *Profeſſor of Midwifery and of Clinical Medicine in Columbia College.*

Dear Sir,

A CASE of chylous dropſy (if I may uſe the expreſſion) lately occurred in my practice, which I judge to be rather an uncommon one; at leaſt it is new to me, and my memory does not ſerve me with a ſimilar inſtance on record, brought to a favourable termination.

In December of laſt year, T. L. of South-River, applied to me for worm medicines for a boy of twelve years old, deſcribed to have an enlarged abdomen, and very inſatiable appetite. Calomel, pink-root, &c. were adminiſtered and repeated without any beneficial effect. On viſiting the lad afterward, it appeared evident that his abdomen contained a large quantity of ſome fluid, ſo much as to prevent a recumbent poſture altogether. He laboured under none of the other ſymptoms of dropſy, ſuch as oedematous ſwellings, or much relaxation of the ſolids: he only appeared ſomewhat leaner than uſual.

The patient was brought to town, a few days after, and tapped. On withdrawing the ſtilette, you may judge our ſurprize to find a moſt pure, white and fragrant chyle, or milk, to follow, which continued to flow until we obtained between ſeven and eight quarts. This chyle had rather more of a chalky white colour than cow's milk. It was perfectly ſweet and pleaſant both to the ſmell and taſte; and, after ſtanding through the night, afforded a good cream, though not quite ſo much as is uſually obtained from the ſame quantity of cow's milk.

After the operation, the boy was reſtored to his uſual feelings, and, in fact, ſeemed to have no complaint, ſave a conſtant craving for food. He was taken home three days after, and I heard no more of him for fourteen days, when I was requeſted to viſit him in the country. I found him, in all reſpects, as before, ſave a greater degree of emaciation; and, by repeating the operation, I obtained a fluid of the ſame kind, and nearly the ſame quantity as before. From this time until the 20th of March I heard nothing of my patient: as his friends had determined to yield him to his fate, provided the laſt attempt ſhould prove unſucceſsful, I had, in my imagination, numbered him with the dead. Having occaſion to viſit the neighbourhood at this time, I was agreeably diſappointed in finding him in perfect health, without any intumeſcence of the abdomen, and with an appetite reduced to due moderation.

It is evident, from the circumſtances of the above complaint, that ſome of the larger chyliferous veſſels were either eroded or ruptured; and the emaciation which was taking place, and the ſhort ſpace of time which had elapſed between the operations, induced me to conclude the cure beyond the bounds of our art. I therefore contented myſelf with ordering a few doſes of calomel and laudanum, with a view to excite abſorption; but more with a view to ſatisfy the minds of thoſe con-

cerned, than from a proſpect of any permanent utility. I adviſed an adherence to ſolid rather than fluid food; and, being requeſted, permitted a moderate uſe of Geneva.

On inquiry, I learned that no medicine of any kind had been given after the day of the ſecond operation; and, by the poſitive order of the miſtreſs of the family, the patient was entirely reſtrained from the uſe of every fluid except gin, and confined to bread, toaſted brown, and freſh meats, boiled or roaſted, without pepper or ſalt. This regimen was enforced, without the leaſt relaxation, for the firſt ten days. For the two ſucceeding weeks, a ſmall portion of water was ſometimes added to the gin, but never to exceed it in quantity. After which period, perceiving no tendency to the former complaint, the boy was permitted to return gradually to his uſual mode of living, and has ſince continued in good health. During the time of the above regimen, he was two or three times fairly intoxicated, and that too by deſign.

You will, doubtleſs, eſteem the above mode of treatment ſuch as would hardly have been ventured on by a judicious practitioner; and yet to it, I am inclined to think, the boy owes his life.

From the nature of the food and drink, the quantity of chyle generated muſt have been much leſs than uſual. And, admitting that a proportion of it was diſcharged into the cavity of the abdomen, we may ſuppoſe this to have been taken up by the increaſed action of the abſorbent veſſels of that cavity, excited into more than ordinary energy by the ſtimulus of the gin. The diſeaſed veſſel or veſſels being leſs diſtended than heretofore, would, of courſe, be more diſpoſed to heal.

If you, Sir, who are ſo competent a judge in matters of this kind, conceive the above caſe can be of any ſervice to the public, you have my permiſſion to diſpoſe of it in ſuch a way as may appear to you moſt likely to promote that end.

Query. How far would the above regimen ſucceed in aſcites, after the operation?

I am, dear Sir,
With much conſideration,
Your very humble ſervant,

CHARLES SMITH.

New-Brunſwick, (N. J.) Feb. 26, 1800.

ARTICLE IX

An ACCOUNT *of* FEBRILE DISEASES, *as they have appeared in the County of Cumberland, Diſtrict of Maine, from July*, 1798, *to March*, 1800: *Communicated in a Letter from Dr.* JEREMIAH BARKER, *of Portland, to Dr.* MITCHILL.

THE ſummer of 1798 was unuſually hot and ſultry.—From the beginning of July to the laſt of February, 1799, an epidemic fever was very prevalent in ſeveral towns. None above forty, and but few young children, were attacked with the diſeaſe.

The uſual ſymptoms were, pain in the head, back, and ſometimes in the limbs; nauſea and vomiting; loſs of appetite; quick and ſometimes full pulſe; thirſt for water; great heat, generally preceded by chills. The face was ſuffuſed with redneſs, and the eyes were heavy and watery, and, in full habits, inflamed. In a few inſtances the whites of the eyes were yellow, and the ſkin was of the ſame hue. Hæmorrhages from the noſe ſometimes took place, particularly in the young and plethoric. The tongue was furred, and, in the progreſs of the diſeaſe, dry and dark-coloured. A diarrhœa, in ſome, occaſionally occurred, though coſtiveneſs was generally a troubleſome ſymptom. Pain in the region of the ſtomach, together with a ſenſe of foreneſs and tenſion upon the abdomen, frequently attended. A remiſſion of the fever in the morning, and exacerbation in the evening, were always obſerved. Deafneſs frequently took place in the decline of the fever, and a temporary delirium ſometimes occurred.

The violence of the fever generally continued eight or nine days, when it ſubſided, and marks of putreſcency in the alimentary canal were very apparent: in ſome caſes ſymptoms of putreſcency appeared at an earlier period, evidenced by dark green matter ejected from the ſtomach, and black fœtid ſtools.

One hundred and nine of my patients were confined to their beds: ſeveral others were ſlightly affected. Fifty-eight of the ſevere caſes, beſides ſeveral mild ones, occurred in Stroudwater village, adjoining the iſthmus of Portland, where

I reſided, and where I had an opportunity of paying particular attention to all theſe caſes, excepting four. Five died in this village; but I attended only one of the fatal caſes. In a neighbouring village I attended fifteen patients in this fever, and they all recovered. In all theſe caſes, excepting four of the fatal ones, alkaline remedies were liberally employed.

The recovery of many of theſe patients was beyond my expectation; but I aſcribed it to the ſeaſonable and liberal uſe of alkalines: for, among many other patients, in neighbouring towns, ſeveral died; and in theſe fatal caſes the alkaline remedies were either neglected or not duly adminiſtered, though the other remedies were regularly employed.

A woman, from a diſtant town, who viſited one of the ſick families in Stroudwater village, in January, 1799, was attacked with a ſimilar fever, in a few days after her return home, and died. During her ſickneſs three others of the family were ſeized with the ſame fever, two of whom died; and all neceſſary meaſures were employed, as the phyſician has ſince informed me, excepting alkalines.

The ſucceſs that has attended the uſe of alkaline remedies in this fever, not only in my hands, but in the hands of ſeveral of my brethren, has attracted the particular attention of many among as; ſo that, unleſs a patient is under a courſe of alkalines during the fever, we are accuſed of neglecting the moſt neceſſary means: for it has been frequently obſerved, that when theſe remedies have been neglected, however judicious the treatment was in other reſpects, ill ſucceſs has generally been the conſequence. In Stroudwater village two patients had a yellow ſkin. One of theſe died; and in this fatal caſe alkalines were not employed, though other remedies, as I am informed, were not neglected.

I attended ſix caſes in July, ſixteen in Auguſt, twenty-five in September, twenty-four in October, nine in November, eight in December, fifteen in January, and ſix in February.

It is remarkable that the greateſt degree of mortality happened in the winter months, when the weather was extremely cold, and the earth loaded with an unuſual quantity of ſnow. Perhaps the patients being confined in warm, tight rooms, ſecluded from pure air, increaſed the malignancy of the diſeaſe; for in this ſeaſon ſymptoms of putreſcency were more apparent.

Blood-letting, in full habits, eſpecially in the ſummer and fall months, was evidently beneficial; and bliſters, in caſe of local affection and delirium, always afforded relief

Cleanſing the ſtomach with ſome ſuitable vomit was invariably attended with good effects, as well as purging the inteſtines with cathartics. But when emetics were omitted, however liberally cathartics had been employed, unhappy conſequences frequently enſued.

I have long been perſuaded that cathartics do not properly cleanſe the ſtomach. The ſituation and ſtructure of that viſcus, ſuſpended, as it were, by both ends, and lined with folds, ſeem naturally to ſuggeſt this idea to the mind. But I have many caſes upon record, which, in my view, ſerve to render this opinion indiſputable.

In September, 1798, I was called to a woman, upon an iſland, who had laboured under the prevailing fever for twelve days. I found that her moſt diſtreſſing complaint was pain and anguiſh in the bowels, for which ſhe had taken ſeveral cathartics, procured from an apothecary; and, although they operated powerfully, no permanent relief was obtained. I gave two grains of tartar emetic, and fifteen grains of ipecacuanha, which ejected a large quantity of dark green, and *remarkably* fœtid, matter from her ſtomach. The pain and diſtreſs then left her, and returned no more. Tonics and alkalines were then employed, and ſhe ſoon recovered.

I could mention many other caſes, in which great benefit was obtained from vomits, when cathartics had proved ineffectual. Theſe things being taken into conſideration, I have made it a general rule to direct an emetic, whether called in the beginning or declining ſtage of the fever, unleſs a ſpontaneous vomiting had ejected the offending matter.

The next ſtep was to evacuate the inteſtines with jalap and ſal. abſynth. The alkaline remedies were then employed according to the urgency of the caſe; obſerving always to keep the bowels in a ſoluble ſtate with caſtor oil and ſalts.

Experience has taught me, that alkaline ſalts and lime may be taken much more liberally than I have heretofore imagined. In many caſes of fever I have given twenty grains of ſal. abſynth, with thrice that quantity of calcined oyſter-ſhells, once in three or four hours, and made lime-water a common drink, with impunity, and evidently to very great advantage. Waſhing the ſkin of the patient with a ſolution of alkaline ſalts has likewiſe been practiſed, and apparently with good effects.

I have alſo directed quick-lime to be depoſited in the rooms of the ſick, which evidently purified the air.

I feel a perſuaſion that theſe articles poſſeſs a much greater

power in the cure of febrile diſeaſes than has formerly been imagined: and I believe that very great improvements will in future be made reſpecting the mode of application.

In the ſummer of 1798, the inhabitants of the town of Boſton very judiciouſly ſtrewed *quick-lime* over the materials undergoing putrid fermentation, with a view to arreſt and deſtroy the poiſonous exhalations; and may we not, with equal propriety, employ this, and other articles of a ſimilar nature, as remedies, when the human body is actually poiſoned with theſe noxious effluvia?

During the ſpring months of 1799, low, ſlow fevers were prevalent, attended with cough, and great expectoration of matter, often mixed with conſiderable quantity of blood, putting on all the appearance of what is called *hectic fever*. I attended twenty-three caſes of this ſpecies of fever, in which they frequently lingered for two or three months. They all recovered, excepting one, upon the tonic and alkaline plan.

From July to November general health prevailed. The ſummer ſeaſon was rainy and cool, accompanied with much thunder and lightning.

In the months of November and December, 1799, and in January and February, 1800, an inflammatory fever, attended with a ſore-throat, prevailed in ſeveral towns, among adults as well as children.

The diſeaſe was uſhered in with a pain and ſoreneſs of the throat, which ſoon ſwelled both externally and internally; redneſs of the fauces, and difficulty of ſwallowing, often with increaſed ſalival diſcharge; nauſea and vomiting; increaſed heat over the whole body; redneſs of the face, with heavy and watery eyes; pulſe quick and full.

In four or five days the inflammatory action of the veſſels abated, and a livid appearance was diſcoverable in the fauces, which were generally much excoriated, diſcharging a coroſive, offenſive ſanies. A febrile diſturbance continued until the ninth or tenth day from the attack, when a recovery or fatal termination took place.

The diſtemper generally proved fatal where ſeaſonable aſſiſtance was not employed.

Vomiting and purging always afforded relief; and bloodletting, on the firſt or ſecond day, was evidently beneficial. Calomel, if it produced a ſalivation, ſeemed to be productive of good effects, by unloading the glands and abating the ſwelling; but it did not appear to correct the virulence of the humors or reduce the fever.

Bliſters upon the neck and arms produced a great diſcharge. The parts were very ſore, and often very highly inflamed. On this account they were not attended with ſuch good effects when applied to the throat. Roaſted onions, impregnated with oil, applied to the throat, abated the ſwelling and relieved the ſwallowing, when a bliſter to this part often aggravated the complaints, and, in ſome inſtances, produced a gangrenous affection.

With a view to ſubdue the febrile diſturbance, which I ſuppoſed was kept up by the virulence of the poiſonous cauſe, I made a liberal uſe of lime-water; as alſo a powder of ſal. abſynth, and calcined oyſter-ſhells; together with linſeed oil and flaxſeed tea, often repeated.

Theſe articles were certainly attended with ſalutary conſequences; for where they were ſeaſonably and duly employed, the virulence of the humors ſeemed evidently to be corrected, and the fever ſubſided. The bark and tonic bitters, with nouriſhing food, were then directed, and health was ſoon regained. In nearly one half of the highly inflammatory caſes the diſtemper proved fatal; and, I believe, generally for want of ſeaſonable aſſiſtance: for if depleting remedies were not employed on the firſt or ſecond day, there was but little hopes of a favourable termination; but when they were, and the other remedies were duly adminiſtered, the patient generally recovered.

ARTICLE X.

An ACCOUNT *of the* ORIGIN *and* CAUSE *of the* YELLOW FEVER, *as it appeared at Wilmington (State of Delaware), in the Autumn of* 1798: *Communicated in a Letter from Dr.* JOHN VAUGHAN *to Dr.* MILLER; *dated Wilmington, January* 4, 1800.

Dear Sir,

WITH the wiſh of adding my *mite* towards a ſolution of that conteſted problem, the origin of the yellow fever, I encloſe you ſome facts reſpecting its occurrence here, in the fall of 1798.

Our worthy friend Dr. Tilton has informed you, that "he takes it for granted the diſeaſe was imported here from Philadelphia." I candidly confeſs myſelf to have been an advocate for the ſame opinion; and as candidly acknowledge, that I believe we were miſtaken: and the following facts will enable an impartial public to decide the queſtion.

As I did not reſide here during the exiſtence of this fever, it may, perhaps, be ſaid, that I am not qualified to judge of its origin. On the other hand, it muſt be admitted, that men are ſeldom ſolicitous of collecting, much leſs of perverting, teſtimony againſt themſelves; that no man who regards his reputation, and the public good, would wilfully diſtort facts, to miſlead the unwary, and inculcate a falſe belief on a queſtion of ſo much importance as the preſent.

To elucidate the riſe and progreſs of the diſeaſe, I ſhall give you a ſketch of the ſituation of the town, and trace the diſeaſe minutely in its paſſage along the flats.

Wilmington is ſeated on a hill of 109 feet elevation above the level of the tide. The moſt compact part is on a ſouth-weſtern declivity. It is bounded weſt by Chriſtiana-Creek, a tide-water:—ſouth-ſouth-eaſt by the River Delaware, diſtant a mile and a half; the intermediate ſpace compoſed of flat ground, a conſiderable portion of which is marſh:—eaſt by Brandywine-Creek:—north by an extenſion of the Pennſylvanian highlands. The northern ſide is interſected by a ſmall *vale*, in which there are breweries, tan-yards, &c. &c. The weſtern ſide of Chriſtiana-Creek is bounded by an extenſive marſh, which had been continually inundated for a number of years, but drained in the ſpring of 1798. From the middle of July this marſh became extremely offenſive, as may naturally be ſuppoſed, from one hundred acres of mud, covered with dead fiſh and decaying vegetables, expoſed to the action of a vertical ſun.

This, in addition to ſome filthy docks, rendered the atmoſphere of Water-ſtreet ſo diſagreeable, that the inhabitants were obliged to cloſe their doors and windows at ſun-ſet.

Dr. Tilton obſerves (Med. Rep. vol. iii. p. 128), "it was very remarkable, that the diſeaſe was not communicated from the firſt perſon who died of it, and who came down (from Philadelphia) and ſickened in the land ſtage. But when the fever became epidemic, it took riſe at the water's edge, and infected all, or with few exceptions, gradually up to High-ſtreet. Above this the town is more thinly built, and the caſes were ſolitary as in the country." The fact certainly

was, that the inhabitants thought themſelves ſecure until the lower ſtreets were conſiderably infected. It ſoon became general, nay, almoſt univerſal, in the three lower ſquares, extending ſouth and ſouth-eaſt, round into the flats facing the Delaware, and north into the valley afore-mentioned, depopulating as it went. In this circuit of about four ſquares upwards of two hundred perſons died: whereas the remainder and higher parts of the town were almoſt entirely exempt, though by no means equally deſerted.

An intelligent gentleman, who reſided here during the fall of 1798, informed me, that he, on riſing early one morning, was ſurprized at the appearance of a cloud coming from the marſh on the lower parts of the town. Struck with this phenomenon, he aroſe the next morning at day-break, and obſerved a very thick fog on the ſurface of the marſh, of about four feet in height, totally obſcuring the bodies of the trees in the marſh, while their tops were not affected.

As the ſun roſe, the fog roſe alſo, leaving the ſurface of the marſh perfectly viſible; and, paſſing gradually over the creek, ſettled on the lower part of the town, and ramifying round into the ſouth-eaſtern flats and northern vale beforementioned, till the heat of the ſun entirely evaporated it. He repeated his obſervations frequently, and always obſerved the ſame phenomena. Others have informed me, that the atmoſphere of the diſeaſed circuit was not only offenſive to the ſenſe of ſmelling, but extremely oppreſſive; that the air appeared to have loſt its elaſticity altogether.

Theſe facts are equally true and important, and tend to reflect much light on the origin of our yellow fever; notwithſtanding the foreign origin of the diſeaſe was ſo generally admitted.

There was one caſe here laſt ſeaſon, in a lady from Philadelphia, who had buried ſome of her family before her emigration. She died; and, though nurſed without reſtraint, did not infect her attendants.

"The nurſes and attendants at the hoſpital here, in 1798, all eſcaped infection," becauſe they were removed from the ſphere of miaſma.

Several ſporadic caſes happened in this neighbourhood laſt fall, but no inſtance of communication: and while we keep our marſh dry, or inundated, I believe we have little to fear.

It is worthy of remark, that while the diſeaſe raged ſo violently in this town, the inhabitants of the oppoſite ſide

of the marſh were not affected. The wind blows almoſt conſtantly from the ſouth-weſt, wafting the miaſma over to the leſs fortunate Wilmingtonians.

In reviewing this ſhort account, three queſtions naturally ariſe in the mind of every unprejudiced man.

1ſt. If the yellow fever be of foreign origin, and contagious, why did it not ſpread here, in the ſummers of 1793 and 1797, when the Philadelphians were admitted, nurſed and buried without reſtraint? Not a ſingle inſtance of communication happened.

2dly. If the remote cauſe of yellow fever be contagious, why does it not, like the ſmall-pox and meaſles, communicate, under all circumſtances, without the aid of marſh effluvia? It will ſcarcely be denominated leſs virulent, if we admit a proportion between cauſes and effects.

3dly. If the diſeaſe was produced by the effluvia of the weſt marſh, it muſt have been, at this time, more ponderous than uſual, by its grovelling on the flats and up the vallies, and not ſoaring on to the hills, as in ordinary caſes? (Vide Med. Rep. vol. iii. p. 223).

To the preceding ſummary may be added an account of the occurrence of the fever in Chriſtiana village, and its neighbourhood, at the ſame ſeaſon, which I ſhall venture to pronounce an *indigenous diſeaſe*. I ſhall not, at preſent, give a minute detail of the diſeaſe, but reſerve it for an article in the hiſtory of the diſeaſes of Delaware. It may ſuffice to ſay, that the ſymptomata were complete.

The firſt caſe that occurred was in the Welſh-Tract ſwamps —attended with naſal hæmorrhage, petechiæ, &c.

The ſecond was adjacent to an extenſive marſh—attended with the black vomit—delirium continuing without fever, &c. Three perſons died out of this houſe in ſucceſſion; and, notwithſtanding I was ſuſpicious of contagion, and made every effort to eſtabliſh it, no pretext could be found; and the occurrence of the diſeaſe in various other parts of the adjacent country, ſoon convinced me that it was an *indigenous* product.

In September the diſeaſe was general, and truly alarming. It alſo preſented itſelf in Newcaſtle, but was there referred to contagion.

I viſited ſeveral perſons there; and, having renounced the idea of contagion, endeavoured to quiet the fears of the attendants. It alſo extended down, along the river ſhore, for ſome diſtance.

Generally ſpeaking, the diſeaſe was rather more mild than in Wilmington and Philadelphia, but frequently equally malignant and fatal.

A number of emigrants from Philadelphia and Wilmington were attacked with the diſeaſe; perhaps brought the ſeeds of it with them; and, though nurſed with all the attention that affection and humanity could afford, there was not a ſingle ſuſpicion of communication.

This haſty ſketch will ſerve, I hope, to ſhew the difference between implicit aſſent and inveſtigation. To the *former* I have confeſſed myſelf a victim; to the *latter* I avow myſelf a convert; believing that a man deſerves more credit for acknowledging than perſiſting in an error, particularly when the welfare of ſociety is, in ſome meaſure, involved in his opinion. It is moſt devoutly to be wiſhed, that the real origin of this deadly diſeaſe could be agreed on by the faculty. We ſhould then join hands in purſuit of one object; the community would aid us; and ſome hope might be entertained of exemption, ſooner or later, from its devaſtation. At preſent the proſpect is gloomy.

With the utmoſt ſolicitude for the ſucceſs of your uſeful work,

I remain yours ſincerely,

JOHN VAUGHAN.

REVIEW.

ART. I. *A Treatiſe on the Plague and Yellow Fever; with an Appendix, containing Hiſtories of the Plague at Athens, &c. By* James Tytler, *Compiler of the Medical Part of the Encyclopædia Britannica. Salem. Printed by* J. Cuſhing, *for* B. B. Macanulty. 8vo. pp. 568. 1799.

SINCE the American cities began to be viſited by peſtilential diſtempers, a large number of publications concerning them have iſſued from the preſs. Not a few of theſe have been noticed in the progreſs of our review. Of thoſe which we have not mentioned, ſome were publiſhed before the Medical Repoſitory was begun; ſome which we have heard of we have not been able to procure; and others remain on hand, to be taken up in their turn. Were authors diſpoſed to favour and accelerate our labours, by ſending us copies of their books and pamphlets, it would oftentimes be in our power more ſeaſonably to ſubmit our abſtract or opinion of them to the people of the United States. As we are circumſtanced at preſent, the ſmallneſs of literary intercourſe, between many parts of the weſtern continent, renders it more difficult to procure ſome of our domeſtic productions than thoſe of Great-Britain. And, odd as it may appear, it has ſeveral times happened, that American performances have firſt become known to us through the medium of Hamburgh and London.

Though we had heard of the publication of Mr. Tytler's volume, yet ſeveral months elapſed before it travelled from Salem to New-York. Since it came into our hands we have looked over its pages, and ſhall now give ſome account of their contents.

The writer, we are informed, is an emigrant from Scotland, and has been accuſtomed to hiſtorical and literary compoſitions. We are, indeed, at this time, plainly told that the medical part of the Britiſh Encyclopædia was prepared by his hand. From the habit of writing he may be ſuppoſed to have acquired, and from his familiar acquaintance with medical ſubjects, it is not at all to be wondered at, that ſuch a member of the literary corps of Europe ſhould take up his pen,

and join the people of the atlantic coaſt in their reſearches into the origin and nature of endemic and peſtilential diſeaſes. We have not, however, learned from Mr. T.'s book, or otherwiſe, that he has been *perſonally converſant* with plagues and peſtilence, during their prevalence; nor that he is entitled to the character of an *original* obſerver of events and occurrences, in ſuch times of public commotion.

On the other hand, Mr. T. appears before us as a compiler. Though a writer ſhould not offer to his reader any *new* facts, he may ſtill preſent him a work inſtructive by its matter, and valuable for its arrangement. Hiſtorians are compilers; and their works are chiefly prized for the materials they collect, and the ſkill with which they methodize them. He who carefully gathers together the parcels of any department of knowledge into a *body*, is commendably employed. Yet the materials of every copious ſubject require to be *digeſted*. A *ſummary* of the leading doctrines and opinions, on queſtions of general concern, may be eminently ſerviceable. How excellent a *compendium* of geometry has been furniſhed by Euclid! What a noble *epitome* of chemiſtry was made out by Lavoiſier!

The writer divides his work into two parts; and treats, in the former, on what he calls the Aſiatic, or true plague; and, in the latter, on the yellow fever, a diſeaſe of a deadly nature in the weſtern world. Having obſerved that the two have been confounded in deſcription, and that attempts have been made, of late, to prove them but gradations of the ſame malady, Mr. T. makes it a principal object of his inquiry to ſhew that this is a miſtake, and that there is a real and eſſential difference between them.

After devoting three hundred and ſeventy pages to an inveſtigation of the origin, progreſs, ſymptoms, prevention and cure of the genuine or Oriental plague, our readers will be diſappointed, and, we fear, mortified, at the inferences which Mr. T. draws from the hiſtorical records which he has examined. They are ſo remarkable that we ſhall deliver them in his own words:

"I now conclude this part with a ſhort retroſpect of the principal facts which, to me, ſeem to be the reſult of the inveſtigation. 1. That the plague is of an unknown (I believe it of *divine)* original. 2. That in the countries on which it firſt was ſent it ſtill remains, and from them has always been propagated to others, without a ſingle well atteſted inſtance to the contrary. 3. That the means by which

the diſtemper uſually has been propagated are *war* and *commerce*. 4. That the diſeaſe differs from all others, in having a more violent tendency to inflammation, inſomuch that it approaches to actual accenſion; nay, that the extraordinary inſtances of ſpontaneous burning we read of are to be accounted only the higheſt degree of this diſeaſe. 5. That the immediate or proximate cauſe of the plague is a tendency in the blood, and other fluids, to diſcharge upon certain parts the latent heat they contain, in ſuch quantity as to deſtroy theſe parts entirely, and to convert them into a kind of coaly ſubſtance. 6. That this tendency depends on a certain inexplicable action of the external atmoſphere, particularly of the elementary fire contained in it, and of which it principally conſiſts.* 7. The approach of a plague cannot be foretold, either from the conſtitution of the atmoſphere, earthquakes, ſtorms, or any other natural phenomena. 8. The plague is an eruptive diſeaſe, and it is known to be ſo by the *certain death* of all in whom eruptions do not appear; a tendency to eruption being *always* obſerved where life remained long enough. 9. The contagion of the plague diffuſes itſelf from a ſmall ſpace all around, leſſening in violence the farther it is diffuſed. In its moſt concentrated ſtate it hath proved invincible by medicine; in its mild ſtate it requires none;† ſo that, in the plague, the medical powers are found of leſs avail than in any other acute diſtemper. 10. The natural cure of the plague is by perſpiration or ſweat; and this, perhaps, is the only evacuation which ought to be kept in view, as having a ſalutary tendency, by thoſe who attend the ſick."‡

In this we do not complain that there is nothing to flatter human vanity; but, alas! we grieve that there is ſo little to aid or comfort human weakneſs.

Mr. T. in p. 47, goes a little further into particulars. After a ſtatement of various facts relative to the Jews, Tyrians, Carthaginians, Greeks, Turks, and others, he adds: "In this way we may, in a pretty plauſible manner, account for the origin of this diſtemper; viz. that it originally fell upon the Jews as a puniſhment for their iniquities; that from the Jews it has been, at different times, conveyed to other nations;

* "Theſe two laſt concluſions (though I believe them myſelf) are propoſed only as probable conjectures, which, as yet, I ſee nothing to contradict.

† "See p. 282.

‡ "The operation of oil, ſo much recommended by Mr. Baldwin, is ſaid to be by producing ſweat. (See above, p. 341.")

and, by a mixture of thoſe nations, has at times become general all over the world. At laſt it has, by the avarice of that people who firſt had been the occaſion of its being introduced into the world, become permanent in Conſtantinople, whence it is ſtill diffuſed among different nations, in proportion to their dealings with that capital." And in p. 71: "At preſent we may conclude, that the peſtilential contagion having originally fallen upon mankind for their ſins, it is ſtill kept alive by the ſame cauſes; and, as far as we can conjecture, theſe ſins are, the propenſity to murder and deſtroy, which breaks forth in war; the vanity, pride and luxury which produces great cities; and the ſame vanity, &c. joined with avarice, which gives life to commerce."

We fully agree with the writer, that the plague, and, we add, all the other phenomena of this world, and of the univerſe, are to be reſolved ultimately into the power and agency of the Supreme Ruler, or *Primary* Cauſe. It ſeems to us alſo, that in accompliſhing *ends* he makes uſe of *means*; and theſe means, in the caſe before us, are what are termed *ſecondary* cauſes. The modeſty of ſcience has given up the inveſtigation of the firſt cauſe as beyond its comprehenſion. The true buſineſs of philoſophy is the tracing of ſecondary and ſubordinate cauſes to their effects, and, *vice verſa*, of effects or events to their cauſes, as far as our capacities extend. Generally ſpeaking, it is neither inſtructive nor neceſſary to overlook the whole catenation of intervening cauſes, and refer every thing at once, *en maſſe*, to the immediate will, or direct operation, of the CAUSA CAUSARUM.

> "Nec Deus interſit, niſi dignus vindice nodus
> "Inciderit"——

Is a good maxim in philoſophy as well as in poetry.—Now, we are ſatisfied that the production of peſtilential matter from the elements which compoſe it, is a proceſs of no greater myſtery nor complication than happens, every day, in a thouſand other caſes: and Mr. T. ought, as much as in the preſent inſtance, to aſcribe the production of the ſeeds of plants, and the eggs and germs of animals, with their evolution and growth afterwards, to an immediate act of Deity. And, in the ſame brief and conciſe manner, he might account for the diſtribution of ſunſhine, and rain, and for the winds, tides and ſeaſons in the planet we dwell upon—*Omnia Jove plena.* But we ſhould not dignify this with the name either of philoſophy, ſcience, or even of hiſtory.

The faſhionable doctrine has been to derive the contagion

of plague from one perſon or thing to another, in legitimate ſucceſſion, from the *ancient*, and, as Mr. T. believes, its *divine* ſource. From the Jews, for inſtance, to the Phenicians; from theſe to the Carthaginians; from theſe again to the Sicilians, &c. in one channel: then from the Jews again to the Romans, and the nations with whom that people had intercourſe, in another: then again from the Jews to the Egyptians, the Saracens, the Greeks, the Turks, &c. in other currents: and from the ſame Jewiſh manufactory to make it ſpread, with the cruſaders, all over the weſtern parts of Europe. Thus all manner of miſchief ſallied forth from Pandora's box; and one of theſe fables is about as worthy of credit as the other. The favourers of this derivation of contagion frequently expreſs themſelves about it by ſparks, or other metaphors derived from fire. We recommend to them another parallel, which they ſeem not to have thought of; which is, to derive *fire* itſelf, as well as the *plague*, from the *Hebrews*; and this could be done with perfect eaſe, by affirming, that from the original and true Jewiſh fire did the Tyrians and their coloniſts, the Egyptians, the Greeks, the cruſaders, and every body elſe, derive the firſt ſparks, which are ſtill preying upon the dry wood, and all things elſe prediſpoſed to be acted upon by them over the whole earth. This analogy of *fire* would, we think, throw much *light* on the ſubject.

But to be ſerious—As the *moral* conduct of man is conſidered inſtrumental in ſtirring up plagues, this, we conceive, may happen through a neglect of cleanlineſs, or by ſuffering peſtilential filth to form and accumulate in and around their perſons and habitations. We conſider it a part of the moral law, to be clean and free from defilement. The breach of this law is a vice or evil, for which the offender muſt expect ſome kind and degree of puniſhment. It often happens that the puniſhment for tranſgreſſions of the moral law follow ſpeedily the offence, and the ſinner, before entering upon the life to come, ſuffers the penalty he has incurred in this world. Noxious or peſtilential vapours are the natural offſpring of perſpired and excreted ſubſtances undergoing corruption, and added to the incalculable maſs of animal matter afforded by the bodies of beaſts, birds, fiſhes, and other creatures killed for the purpoſes of food and manufacture, and collected into cities by the induſtry of man. When, from a long-continued and exceſſive accumulation of ſuch materials, and a neglect of the means of preſerving public as well as private cleanli-

neſs, ſickneſs ariſes, it may be properly enough conſidered a viſitation upon the inhabitants of a town or place, for their contempt of a high moral obligation. If war, commerce, and hot ſeaſons, tend to augment the cauſes, then peſtilential diſtempers may be expected to follow of courſe.—So far may men be conſidered as bringing down judgments upon their own heads: and theſe judgments may be generally mitigated, and ſometimes wholly averted, by due and ſeaſonable uſe of oils, calcareous earths, alkaline ſalts, ſoap and water, as both ancient and modern experience evinces.

The firſt part of Mr. T.'s work is divided into five ſections; of which the firſt treats of the etymology of *plague*, its antiquity, and an account of ſeveral plagues deſcribed in the Hebrew ſcriptures, and in profane hiſtory. The ſecond inquires into the countries where it is ſuppoſed to originate—the influence of climate in producing diſeaſes—and the moral conduct of the human race as operating in a ſimilar manner. The third, which comprehends two hundred and twenty-eight pages, contains a large portion of phyſiology, or of principles of the practice of phyſic, as well as an ample diſplay of chemical knowledge, forming a long and wide digreſſion from the plague. He, however, returns, at length, to its medical hiſtory, and apologizes, toward the end of the ſection, for having ſeemingly ſtrayed from the ſubject. The fourth comprizes the means of prevention, collected from Mead, A. and P. Ruſſel, Howard and others, and conſiſting of ſhutting up houſes, quarantines, and the like regulations; and a detail of ſome preventative methods attempted in the Britiſh navy, at Smyrna, &c. concluding with a recommendation of guarding againſt it in the ſame way we provide againſt ſmall-pox, by *inoculation*. In the fifth, the cure is conſidered; and the phyſicians whom he deems beſt acquainted with it, are the Ruſſels of Aleppo, and the phyſicians of the Ruſſian army. Then, after mentioning the ſentiments of Sydenham, Hodges, de Mertens, and Diemerbroeck, he concludes this part of his treatiſe with the general inferences before quoted.

Our readers will, before they have proceeded thus far, have been convinced, that Mr. T. is a moſt rigid adherent to the *old notions of contagion*, &c. in phyſic. It only remains to inform them, that he is vehemently oppoſed to the new Nomenclature, and its conſequences in chemiſtry, declaring that Lavoiſier (as if it was ſolely his work), by changing *entirely* the language of former chemiſts (a number of the former

terms ſtill remain), and ſubſtituting a ſet of new terms of his own invention, "certainly has entailed the greateſt curſe upon the ſcience it ever met with." In which opinion, as well as in a multitude of others contained in this piece, we believe Mr. T. to be totally miſtaken.

(To be continued.)

ART. II. *The Doctrine of Phlogiſton eſtabliſhed, and that of the Compoſition of Water refuted. By* Joſeph Prieſtley, *LL. D. F. R. S. &c. &c. Northumberland.* Kennedy. 8vo. pp. 90. 1800.

FREQUENTLY, in the courſe of our work, we have had occaſion to mention the phlogiſtic controverſy, which, though carried on with much zeal, labour and talents, has not yet exhauſted the ſtrength of the parties. Our readers, we hope, will participate the pleaſure we feel on taking a retroſpect of our pages, and finding the United States the theatre of ſo much ſcientific diſquiſition. Our Repoſitory contains the ſeries of theſe events, from the time that Dr. Prieſtley's Conſiderations, &c. part i. (ſee vol. i. p. 221) were publiſhed, to the anſwer of Mr. Adet (ibid. p. 225), the examination by Profeſſor Maclean (ibid. p. 348), and a plan of accommodating the diſpute, propoſed by Mr. Mitchill (ibid. p. 514). It alſo contains an account of Dr. Prieſtley's Obſervations, &c. part ii. (ibid. p. 541), and the eight letters, at large, which he addreſſed to Mr. Mitchill on the points of difference (ſee vol. i. p. 521. vol. ii. p. 48, 163, 166, 263, 269, 383, 388). Much of the wide range of diſcuſſion herein embraced is new and original.

It is very remarkable, that a man who gives the greater part of his time to *theological* ſtudies, can accompliſh ſo much in *phyſics* as Dr. Prieſtley does. But an induſtrious employment of one's ſelf, and a methodical diſpoſition of buſineſs, will accompliſh wonders. In the preſent publication, this indefatigable explorer of the arcana of nature has ſummed up the arguments in favour of phlogiſton in a conciſe manner, and exhibited them, in one group, to the view. In doing this he facilitates inquiry, and puts it in the power of the ſtudent to underſtand the *merits* of the queſtion, without a tedious and formal preliminary.

It is known to thoſe who have peruſed the new Nomen-

clature, propoſed by the philoſophers of Paris, in 1787, that ſeveral claſſes of natural phenomena, which had been conjectured to be effected by the mediation of extremely ſubtil, though active fluids, are left out of the enumeration, unexplained, and not accounted for. The doubtfulneſs of the exiſtence of ſuch ſubſtances as the ſuppoſed *magnetic* and *electrical* fluids, prevented their inſertion, as diſtinct and material beings, in the catalogue of elements or ſimple bodies. The former was rather believed to be a modification of iron, and the latter but a condition of the igneous fluid. In like manner it appeared to the contrivers of that project for a philoſophical language, that the phenomena of inflammation or combuſtion no more required a *phlogiſton* to explain them, than the corruſcations of lightning, and the polarity of the needle, ſtood in need of their peculiar eſſences.

How far theſe reformers were warranted in their proceedings is not yet completely ſettled. In ſpite of their neglect and ſilence, magnetiſm and electricity are generally talked of as connected with the movements of peculiar fluids; but as the proof of their exiſtence is neither very ſtrong nor pointed, no warm conteſt has been raiſed concerning them.

It has been otherwiſe with phlogiſton. From the time that *Beecher* began to obſerve the proceſs of combuſtion with a philoſophical eye, and *Stahl* to generalize the phenomena, it had ſeemed to them, and to moſt of thoſe who had witneſſed their experiments, and conſidered their interpretation of them, that combuſtible bodies contained *a principle of inflammability*, and that this was very aptly denominated "phlogiſton." Neither they nor their followers, however, had diſentangled the intricacies of combuſtion, ſo far as to let it be underſtood which of the various elementary particles, entering into the complicated ſtructure of an inflammable ſubſtance, was κατ' ἐξοχην, the true inflammable material. Though, in the main, they were right, yet they expreſſed themſelves with ſo much uncertainty, and ſo little preciſion, when they came to particulars, and treated of the matter in detail, that they not only differed from each other, but ſcarcely any one was conſiſtent with himſelf. Some thought it a ſubtil and indefinable ſubſtance, differing from every other. Some imagined the phlogiſton a *ſulphur*; others that it was *charcoal*; and, latterly, others that the *baſis of inflammable air* was the thing. In this ſtate of indiſtinctneſs and doubt, it is not to be wondered at, that in the zeal of revolutionary enterprize, phlogiſton ſhould be excluded from a Nomenclature of Science: and in

this the reformers acted wisely, until its advocates would agree upon an explanation or definition, and declare explicitly what it was that they meant.

Bodies that will burn appear to us distinguishable into two kinds; to wit, 1. Those which burn *with flame* or *blaze*; and, 2. Such as burn *without*. Flame, as far as we know and believe, is universally caused by the burning of a gaseous fluid, furnished by the consuming body, and, from its inflammability, termed inflammable air. And as caloric and light are copiously evolved during the union of its basis with the basis of oxygenous air, it comes to pass that the phenomenon of *blaze* is produced, which *Newton* called an "ignited vapour." Kirwan had proceeded in this investigation so far as to declare, that inflammable air, or its radical, was phlogiston; and happy would it have been for the science, if that discerning philosopher had adhered to his definition, and combated the introduction of such a word as "hydrogen" into the Nomenclature. Such bodies, then, as sulphur, oil, alcohol, wood, phosphorus, iron, zinc, ether, camphor, and others, burn with blaze or flame because they contain phlogiston, or the basis of inflammable air. On the other hand, pure *carbon*, and other (if there are any other) simple combustible bases, burns without any flame at all, as in punk, agaric, tinder, and sundry substances which consist almost entirely of *carbonic*, without any admixture of *phlogistic* matter.

With these considerations, we proceed to the examination of the pamphlet before us. On turning over its pages, we cannot forbear to admire the confidence with which the author expresses the establishment of the phlogistic doctrine, and the refutation of the compound nature of water. The piece is particularly addressed to the French chemists who answered Mr. Kirwan (and converted him), or to the survivors of them. The matter in it is arranged under eleven heads, or sections, to which is subjoined an appendix of four articles.

The principal points contended for are the following: 1. That metals are compound substances, and contain phlogiston. 2. That finery cinder is not a proper oxyd of iron, but a combination of water with iron. 3. That the inflammable air produced from finery cinder and charcoal heated together, is formed by the union of the water of the finery cinder with a portion of the charcoal, while the other part of this substance furnishes phlogiston to revive the metal. 4. That the flowers of zinc contain no oxygen; though during their pre-

paration, when ſteam was made to paſs over the metal in an ignited ſtate, inflammable air was produced. 5. That ſulphur is formed by heating vitriolic acid in inflammable air, and by expoſing water, impregnated with vitriolic acid air, to a continued heat. 6. That as calces of mercury are reducible in inflammable air, which is abſorbed during the proceſs, and that metal reduced thereby, it muſt contain phlogiſton; and when calces of quick-ſilver are reduced without addition, the phlogiſton neceſſary for conſtituting the metal muſt paſs through the red-hot glaſs from without. 7. That the antiphlogiſtian experiment of the decompoſition of water, by cauſing ſteam to paſs over red-hot iron, is utterly inconcluſive; and that when an electric ſpark is paſſed through a mixture of oxygenous and inflammable airs, not *water*, but *nitrous acid*, is inſtantly produced. 8. That the proportions of the elements of which water is ſuppoſed to conſiſt (fifteen of hydrogen, and eighty-five of oxygen), do not accord with the reſults of experiments. 9. That the production of dephlogiſticated and inflammable airs, by taking electric exploſions and water, by Trooſtwyck, Deimann and Pearſon, is the reſult of a very complex experiment; and, of courſe, the interpretation of it, to evince the ſolution of water into thoſe airs, very dubious; and that Mrs. Fulhame's interpretation of her experiments is fanciful and fabulous. 10. That fixed air is formed without the preſence of carbon, and conſiſts of dephlogiſticated air and phlogiſton. And, 11. That phlogiſticated air is compoſed of dephlogiſticated and inflammable airs.

In giving this ſummary of the publication, we have endeavoured fairly to ſtate the meaning of the author. The learned reader will inſtantly diſcern how widely he differs from the greater part of the moſt famous and elaborate experimenters of the preſent day. In a number of inſtances, he invalidates their experiments by counter-experiments, which lead to conſequences oppoſite to theirs. Where the contending parties are thus at iſſue upon matters of fact, it is not in our power, nor does it belong to our province, to pronounce which is right. It is a pity that the makers of experiments on both ſides, who are, doubtleſs, equally deſirous of diſcovering truth, cannot be perſonally witneſſes and aſſiſtants of each other's proceſſes, and thus determine where the error lurketh.

Conſidering this as the ableſt piece we have ſeen in defence of the phlogiſtic doctrine, we feel inclined to be the more particular in our remarks upon it. And we muſt acknow-

ledge, after all the pains we have taken to interpret the facts, and underſtand the reaſoning contained in it, that we have many doubts yet unſatisfied. Phlogiſton, as treated of by our author, does not yet appear that well-defined and diſtinct ſubſtance which the apparatus of a laboratory can exhibit, and the mind preciſely comprehend; but is veiled or diſguiſed under ſo many diſſimilar forms of being, and diſcordant modes of expreſſion, that we hardly know what to think of it. Now he offers it to us in the guiſe of "the baſe of inflammable air," or *hydrogen* (p. 26); then as "the baſis of phlogiſticated air," or *azote* (p. 27); and, again, as a conſtituent material of "fixed air," or *carbon* (p. 61). This does not content us: it ſeems *miſcere quadrata rotundis*. We think we have as ſatisfactory proof that theſe three forms of matter, which Dr. Prieſtley affirms to be but three forms of phlogiſton, as diſtinct elements or exiſtences, as we have of the different natures of pot-aſh, ſoda and ammoniac, or of lime, barytes and magneſia.

Thinking on theſe ſubjects as we do, it ſeems very extraordinary that the diverſified phenomena afforded by theſe *three* bodies, can, with any degree of propriety or correctneſs, be referred to phlogiſton, unleſs phlogiſton is an accommodating term, or convenient expreſſion, to ſuit the purpoſes, be they what they may, of the perſon who uſes it. Where it is thus employed, it renders our reaſoning uncertain and obſcure, and tends to embarraſs, rather than diſentangle the ſubject.

The Providence which imparted to the atoms which compoſe this world their reſpective properties, enabled them, indeed, to combine into an endleſs variety of forms, and thereby conduce to the novelty, the beauty and utility of the ſyſtem. But the ſame wiſe and ordaining power ſeems to have prohibited the change of one element into another, and to have forbidden each claſs of ultimate particles to transfer their peculiar qualities or energies to another. We are convinced, that what are termed *hydrogen*, *carbon* and *azote*, are ſubſtances; that they are very unlike each other in many reſpects; and that they are not convertible each into the other, nor into a common matter, phlogiſton. If we were convinced ſuch convertibility was poſſible or frequent among theſe baſes of gaſes, we ſhould, by parity of reaſoning and by analogy of caſes, agree to the exploded doctrine of the tranſmutation of metals, and of the convertibility of tin, antimony and quick-ſilver, to gold.

As reviewers, our ſituation may be compared to that of

jurors, to whom oppoſite and contradictory teſtimony is ſubmitted. We muſt examine the weight of evidence, ſcrutinize the ambiguities of language and expreſſion in the witneſſes, inveſtigate the involuntary bias and propenſities of each, and, by juſt rules of interpretation, endeavour, to the beſt of our judgment, to reconcile the claſhing declarations to each other, and to truth. And thus our verdict, if not flattering, will, at leaſt, be allowed to be honeſt and candid. —We cannot diſcern that azotic air contains phlogiſton, and we therefore are of opinion it is very improperly called "phlogiſticated." The employment of this term to expreſs that portion of the atmoſphere, needleſſly incumbers it with the ſhackles of hypotheſis. We are equally incapable of perceiving wherefore oxygenous gas, which avowedly contains none at all, ſhould be expreſſed by the term "dephlogiſticated," which unavoidably and uſeleſſly brings the ſame ſuppoſed or imaginary agent to the mind. It would be better to diſcontinue the uſe of them both; ſince ſuch is the aſſociation between the words we employ as the ſigns of things, and the things ſignified by them, that, with inappropriate or badly-ſelected terms, it is almoſt impoſſible either to conceive or to expreſs a ſubject clearly. Indeed, if the word "phlogiſticate" means, *to charge or impregnate with phlogiſton*, then its derivative, "phlogiſticated," uſed as an adjective to air, or any thing elſe, can only intend to ſignify that ſuch body is aſſociated to, or ſaturated with, phlogiſton. Now, if there are facts to ſhew, that what is called azotic air is either itſelf phlogiſton, or, during the common combuſtion of fuel or calcination of metals, receives phlogiſton, we acknowledge we either do not know them or do not underſtand them. The very terms are grounded upon a *petitio principii*. They, of courſe, muſt influence the conceptions, and tincture the reaſonings, of all who uſe them. We do not ourſelves employ them as the medium of thought. But we predict that the controverſy between Dr. Prieſtley and his opponents, will never be ſettled while he continues his preſent phraſeology, and they adhere to theirs. The diſpute is chiefly verbal, and inheres leſs in the ſubject than in the manner of expreſſing themſelves about it. Dr. P. declines adopting the new Nomenclature, becauſe its principles are not ſufficiently aſcertained (p. 78). The part of the old terminology to which he adheres, appears to us quite as liable to objection, on that very account, as the moſt exceptionable part of the new.

Nor is the old term, "fixed air," for *carbonic acid*, in any

degree more appropriate. Is this the only *air* capable of being *fixed?* or is it, in its aërial form, fixed at all? Yet, though we wonder at the phraſe ſtill retained to expreſs it, we marvel more that this compound, whoſe conſtitution has been proved, over and again, both ſynthetically and analytically, ſhould be declared to be but a different combination of the ſame elements which form his phlogiſticated gas (p. 72). While this form of expreſſion is retained, it will not be eaſy to think or write with much exactneſs about it.

Inflammable air, ſays Dr. P. is made by the *union of charcoal with water* (p. 18, in the experiment of treating finery cinder with charcoal); and he ſpeaks *of all the phlogiſton in the charcoal* (p. 21) *as capable of being converted, by that proceſs, into inflammable air.* From inflammable air, he ſays, phlogiſticated air may be generated (p. 67 and 74). And he further declares, that charcoal is reſolvable, by means of water, into *fixed* and *inflammable* air, and that fixed air conſiſts of dephlogiſticated air and phlogiſton (p. 58). Now, by p. 26, phlogiſton is the baſis of inflammable air; and, by p. 67 and 75, it gives origin to phlogiſticated (azotic) air. The inference from all which is, that in Dr. P.'s eſtimation, the three ſubſtances called *carbonic acid, hydrogenous gas*, and *azotic air*, are but modifications of the *ſame thing*, and that thing is *phlogiſton.* This ſtrikes us like making *quidlibet e quolibet.* We cannot, though we ſtrive to be impartial, conceive this expoſition likely to enlighten thoſe who are beginning to learn, or to convince ſuch as are already inſtructed.

Such being the avowal of Dr. P. concerning the conſtitution of theſe three kinds of air, it is not wonderful that, in relating his experiments, he ſhould differ exceedingly from other philoſophers. When he uſes the terms *inflammable, fixed*, and *phlogiſticated* air, if we underſtand rightly, he means but different modifications of phlogiſton; while moſt, if not all other perſons who employ the ſame phraſes, or their ſynonymes, intend to expreſs various modifications of hydrogen, carbon and azote. We have reaſon to believe the experienced and reſpectable author is one of the moſt correct experimenters. We have a high opinion of his ingenuouſneſs and candour; but we, at the ſame time, are conſtrained to ſuſpect his peculiar habits of thinking and methods of communicating his ideas, bedim the ſplendour, and diminiſh the value, of his phyſical reſearches.

After theſe reflections on what appear to us the radical and

inſuperable difficulties of Dr. P.'s doctrine, we decline entering into a minute examination of his experiments, as few of his recitals of them are free from the *triune* myſtery of phlogiſton, which exceeds the utmoſt ſtretch of our faith; for, according to it, *carbon is phlogiſton*, and *hydrogen is phlogiſton*, and *azote is phlogiſton*; and yet there are not *three* phlogiſtons, but *one* phlogiſton! &c.

We ſhould be willing to meet Dr. Prieſtley midway, and accommodate the controverſy, by defining phlogiſton to be the baſis of inflammable air and of flame, and limiting its meaning to what has latterly been underſtood by *hydrogen*. This propoſal, which nearly accords with Mr. Kirwan's ideas, has already been made, and has, by him, been rejected (See Med. Repoſ. vol. i. p. 521). He repeats his objections, in No. 1 of the appendix of the work now before us (p. 79), to Dr. Mitchill's attempt to reconcile the two ſyſtems. We can think of no other plan that is plauſible.—The other papers of the appendix contain the claims of the author to the diſcovery of oxygenous air, in explanation of the pretenſions of Ingenhouſz and Lavoiſier, and ſome obſervations on H. Davy's Eſſays.

ART. III. *Tranſactions of the Society, inſtituted in the State of New-York, for the Promotion of Agriculture, Arts and Manufactures, Part* iv. *Albany.* L. Andrews. 4to. pp. 178. 1799.

PART the third of the Tranſactions of this Society, was reviewed in our ſecond volume, p. 315 et ſeq. and already we find another collection of their papers laid before the public.

The ſubjects of the pieces in this volume are various, and are moſtly of an uſeful or practical tendency. They amount, in the whole, to near thirty articles. Among theſe, the communications of the Preſident, Mr. Chancellor Livingſton, make a diſtinguiſhed figure. It is very honourable to himſelf, as well as reputable and advantageous to the country, that a gentleman of Mr. L.'s fortune and ſtation in ſociety devotes a conſiderable portion of the time he can ſpare, from private and public engagements, to the improvement of the uſeful arts. In thoſe intervals, when neither the ſuits in Chancery, nor the Council of Reviſion, nor the Court for the Trial of

Impeachments and the Correction of Errors, require his attention, we find this uſeful citizen engaged in ſome experiment or obſervation in rural affairs, or project in mechanics or economics. The volume before us contains ample proof of the induſtry with which he has laboured. His papers are the following: 1. Experiments to ſhew the advantage of cultivating the vetch (vicia ſativa vulgaris) as a ſummer fallowing crop (p. 21), from ſeed imported, for the firſt time, from England. 2. Thoughts on lime and gypſum (p. 60), tending to explain the manner in which theſe modifications of calcareous earth operate in ſoils. 3. An account of Humboldt's experiments, in the *Journal de Phyſique* for 1798, for accelerating the germination of ſeeds, by means of oxygenated muriatic acid. 4. On the advantages of domeſticating the elk and mooſe of America, and breaking them to the harneſs and draught. Our readers will be pleaſed to learn, that Mr. L. has actually attempted the taming of the elk.

"No attempts," ſays he, "have been made to render theſe noble animals uſeful. Content with ſacrificing them to our hunger, we have never thought of drawing, from their activity and ſtrength, the aids which they might afford us by their labour. The elk is larger than the rein-deer, and, when taken young, as domeſtic as the ox, as I find from having three that run with my cattle, and appear as much attached to them as of their own ſpecies. I have lately attempted to break two of them to the harneſs, and am much encouraged by my firſt eſſay. They have been but twice bitted, and appear to me to be quite as docile as colts would be at their age. They apply their whole ſtrength to the draught, and go on a ſteady pace. Their mouths appear to be very tender, and ſome care is neceſſary to prevent their being injured by the bit. Mine are about two years old, and are not leſs than thirteen hands high: their thighs are as muſcular as thoſe of the horſe. In their native woods, the males grow to about fifteen hands, as far as I can collect from the information of hunters. It is probable, however, that, in a ſtate of domeſticity, they would grow much larger, as all graminivorous animals are pinched for food, in our climate, during the winter. Their gaits are a walk and a trot: they never bound like the ſtag. If, upon trial, it is found that the elk can be rendered uſeful in the harneſs, it would, in many views, be an acquiſition: as its trot is very rapid, it is probable that, in light carriages, they would out-travel the horſe. The rein-deer affords abundance of rich milk. It is not to be doubted, that the animal,

which is only a larger ſpecies of rein-deer, might be brought to furniſh our dairies. It appears to me to be leſs delicate in its food than a horſe. Mine have been kept fat on hay alone, though they were very negligently attended. They are long lived, and more productive than any domeſtic beaſt of burden, generally producing two fawns at a birth. By caſtration they may be prevented from getting horns, if, as I ſuppoſe, their enormous ſize ſhould be conſidered as inconvenient. It is probable, too, that the ſuperabundant nutriment which is annually expended upon the horns, would, in that caſe, add to the bulk of the body."

5. Improvements on the ſteam-engine (p. 89); intended to ſave power by leſſening friction. 6. A diſcovery of a new material for paper, in the conferva rivularis, growing in the Hudſon, with the method of manufacturing the ſame. After an account of his firſt experiments with a mortar, a punch-ſieve, and a bit of canvaſs, the Chancellor proceeds thus:

" I communicated my diſcovery to my neighbour, Mr. Delabigarre, and he entered very heartily into it, and made many experiments himſelf, in conſequence of, and in confirmation of mine, and felt ſuch an intereſt in its ſucceſs, as to propoſe ſuperintending the firſt experiment that I propoſed to make at a paper-mill, at Kaat's-kill, whither he went with 80lb. of the material, all except about 15lb. of which had been dried in the ſun. When he arrived, he found great difficulty in perſuading the workmen to make the experiment, which they conſidered as hopeleſs. Having, by dint of arguments and brandy, overcome their prejudices, they conſented to make the attempt; but as their veſſels were too large for the quantity of materials brought them, and as he wiſhed, at all events, to cover himſelf (though it were with rags and tatters) from the ridicule that awaited him, a number of perſons attending to ſee the experiment, he propoſed to add ¼ of coarſe rags. The maſter-workman, however, preferred only adding 10lb. of rags, or 1-9. Before he had given it half the trituration uſual with rags, he found the paſte perfect; and, upon trying it, he was ſurprized to find that it came off from the mould quicker and cleaner than linen rags, ſo that much more may be worked in the ſame time. Mr. Delabigarre not having leiſure to wait the uſual proceſs of preſſing, drying, &c. brought away a quantity (of which the ſamples I ſend you are part), haſtily dried over the fire. The wrapping-paper you will find ſuperior to that made of rags. The hanging-paper is better than the Engliſh paper commonly applied to that uſe; and I am

perſuaded, from the texture of the material, that, when ſufficiently waſhed, fine paper may be made of it. But ſhould it not, the demand for the ſorts now ſent you, and for ſheathing-paper, would render the diſcovery very important. The want of materials has hitherto kept our mills from being ſufficiently employed; and thoſe materials, together with great quantities of paper, are annually imported. My material is ſo abundant in Hudſon's River, during the ſummer months, that two men may procure as much as two or three tons in a day; and, ſhould it be equally plenty in other rivers, and not be found of the ſame quality elſewhere, I am perſuaded that we may not only ſupply America, but Europe, with paper, as well as give facility to thoſe manufactures that depend upon it, as paper-ſtaining, marbled paper, band-boxes, book-binding, &c."

7. Obſervations on the means of improving the manufacture of flour, and diminiſhing the conſumption of water, in moving the machinery of mills (p. 153), by enabling mill-ſtones, in reducing grain to meal, to act rather by *attrition* than *preſſure*. This paper, with the engraving annexed, are highly worthy of attention, as ſuggeſting what appears to be an eaſy and obvious mode of facilitating the grinding of bread-corn.

8. Obſervations on the manner in which bot-worms are generated in horſes, and the means of prevention; accompanying Major Billings's letter on the ſame ſubject. The ſubſtance of theſe letters is, that the bot-worm, infeſting the inteſtines of horſes, is hatched from the egg often ſeen on the hairs of the legs and bellies of thoſe animals; that theſe are layed there by the nit-bee, or parent inſect; and that bots are afterwards transformed to ſuch winged creatures. Every perſon converſant with horſes, knows that a particular inſect depoſits nits on their hairs. The teſtimony of Mr. Billings is here adduced, to prove that a bot is hatched from ſuch an egg; and that of the late Dr. V. Wemple, that the nit-bee ſprings from the bot.

(To be continued.)

ART. IV. *A Brief Hiſtory of Epidemic and Peſtilential Diſeaſes, &c. By* Noah Webſter, *&c.*

[Continued from p. 288, and concluded.]

IN the eleventh ſection of the work, Mr. Webſter proceeds to confirm his doctrine of the occurrence of peſtilential periods depending upon a vitiated conſtitution of the atmoſphere, by exhibiting proofs of an increaſe of mortality, at the ſame times, in diſtant parts of the world. Sometimes, he obſerves, a ſeries of epidemics falls with more violence on one hemiſphere than on the other; but ſcarcely in a ſingle inſtance has a courſe of diſeaſes been ſpread over one continent without ſhowing themſelves on the other. Remarkable examples of this increaſe of mortality are exhibited by a compariſon of the bills of burials in London, Amſterdam, Vienna, Breſlaw, &c. in the ſame ſeaſons, demonſtrating, beyond all doubt, the operation of a common noxious cauſe. Concurring with theſe ſickly ſeaſons in Europe, malignant epidemics were found to rage in Egypt, in the Levant, and in other eaſtern countries. And, by reſorting to records, ſimilar coincidences are found to have exiſted in different parts of our own country.

In the twelfth ſection Mr. W. treats of influenza, or epidemic catarrh, which he concludes evidently to depend upon occult qualities of the atmoſphere, from its ſudden invaſion of whole families, towns and countries, as well as from the aſtoniſhing rapidity with which it ſometimes ſpreads over land and ſea, uncontrouled by heat or cold, drought or moiſture. This diſeaſe diſplays a wonderful coincidence, in time, with earthquakes, volcanoes, unuſual ſeaſons, and the appearance of comets. Mr. W. has been enabled, by his reſearches, to enlarge the number of theſe epidemics, noted by Sauvages, Cullen, &c.

The order, connection, and progreſſion of peſtilential epidemics, employ the attention of our author in the ſucceeding ſection. His object here is to prove, that the plague, and other peſtilential epidemics of the worſt kind, ſcarcely ever conſtitute an original, diſtinct, iſolated diſeaſe; but that they are the laſt or moſt mortal form of a ſeries of malignant diſtempers, whoſe riſe and progreſs, whoſe ſucceſſion and tranſition from one character and degree to another, as well as from one place to another, will generally admit of being ſa-

tisfactorily traced. The order in which these pestilential epidemics successively appear is not always exactly the same; as they are varied by a multitude of subordinate causes, such as seasons, weather, noxious exhalations, &c. Mr. W. finds, from the researches he has made, that the beginning of a series of malignant epidemics is commonly marked by the appearance of influenza or catarrh, and sometimes of measles or chincough; then follow the different species of angina, smallpox, or other eruptive diseases, remittent fevers, petechial fevers, dysentery, yellow fever, plague, &c. The progressiveness in the pestilential principle, beginning with the prevalence of diseases of a mild character, and ascending, step by step, in a longer or shorter time, to such as are more malignant and mortal, and the concurrence of this progressiveness, in distant regions of the earth, form the most important and instructive of all the results presented by this history of epidemics. On this ground alone, we conceive, unanswerable arguments may be raised against the doctrine of the importation and exportation of epidemical diseases; for this doctrine can never account for a multitude of the phenomena which are observed to precede, to accompany, and to follow the appearance of malignant distempers.

On the subject of the extent of a pestilential state of air, Mr. W. observes, that epidemical diseases are local or general; the former, those which are limited to a particular town, city or country; the latter, those which pervade whole quarters of the earth, or the whole globe. The most common local epidemics are dysentery, intermitting and remitting fevers, yellow fever and plague. The most universal epidemic is catarrh or influenza; next, in extent of prevalence, he supposes to be measles; and then follow the different species of angina. It is also well known, that pestilential fevers have, on many occasions, prevailed over vast tracts of the earth, and sometimes, perhaps, throughout the world.

The fifteenth section is devoted to the exhibition of further proofs of the connection subsisting between comets, earthquakes, volcanic explosions, &c. and the prevalence of pestilential diseases. After this exhibition, the author proceeds to offer some conjectures concerning the causes of these phenomena, whose coincidence and connection he thus labours to establish. He ascribes earthquakes, volcanic eruptions, &c. together with those constitutions of the atmosphere which produce pestilential diseases, to the operation of a common cause, and this cause he supposes to be the electric fluid. By

a ſurcharge of the atmoſphere with this fluid, he believes, a ſtimulus too ſtrong for the healthy actions of the animal ſyſtem to be created; or, by certain combinations of electric matter with other ſubſtances, or certain unknown operations of it upon ſuch ſubſtances, the noxious power in queſtion to be generated. The former ſuppoſition of a morbid action of the electric fluid itſelf is oppoſed by the fact of the mild, and often ſalutary effects of that fluid, when accumulated by inſulation in animal bodies. And the latter, of its combinations or its action upon other ſubſtances, thereby generating a noxious agent, is ſo vague and hypothetical as to contribute nothing to the enlargement of our knowledge on this ſubject. Electricity ſeems to be deeply concerned in the production of clouds, rain, hail, ſnow, and, probably, in many other atmoſpherical changes and operations. We do not deny its agency in earthquakes, volcanic eruptions, hurricanes, &c. but ſtill we think our acquaintance with it too imperfect and limited to warrant the adoption of the principles here propoſed by our author, further than as plauſible and ingenious conjectures. Dr. Shebbeare, many years ago, indulged himſelf in a variety of ſpeculations on this ſubject. He conſidered the human body as little elſe than an electrical machine—the brain as a large reſervoir of electric matter, and the nerves as the conductors by which it is diſtributed to all parts of the ſyſtem. To this agent he referred as the cauſe of animal heat, of muſcular motion, and of all the principal effects produced by the functions of reſpiration, digeſtion, &c.* It is not probable that the Dr.'s hypotheſis will avail much towards an elucidation of the laws of the animal economy, either in a ſtate of health or diſeaſe. But if Mr. W. ſhould be able to ſubſtantiate his opinions on this ſubject, by a further collection of facts, his concluſions will be received with an eagerneſs proportioned to their great importance.

In the ſixteenth ſection Mr. W. delivers the reſult of his inquiries concerning contagion and infection, and the means of diſtinguiſhing them from each other. His facts and illuſtrations on this ſubject poſſeſs great merit, and deſerve to be ſtudied with the utmoſt attention. He defines ſpecific contagion to be "that quality of the diſeaſe which, within a ſuitable diſtance, communicates it from a body affected with it to a ſound body, with great certainty, and under all circumſtances of ſeaſon, weather, or ſituation." We believe a very important diſtinction between ſpecific contagion and other miaſmata, named infection by Mr. Webſter, conſiſts in

* See Practice of Phyſic, vol. 1 and 2.

the former being always a matter of animal ſecretion, and the latter a product of chemical action, independent of vaſcular and vital energy.

In the following ſection our author treats of the means of preventing or mitigating peſtilential diſeaſes. It will be obvious that, ſo far as theſe diſeaſes depend upon an occult and general conſtitution of the atmoſphere, it is beyond the power of human means to correct the cauſe. Much, however, may be done by the removal of all local cauſes, by a free uſe of pure water, and by adopting proper means to guard and fortify our ſyſtems againſt the invaſion of theſe diſeaſes. Judicious directions are given for chooſing places of reſidence in the country, and an excellent plan is offered for building of cities, which we conſider of great importance, and take the liberty to recommend to the attention of every American citizen.

The remainder of the work is devoted to remarks on the diſappearance of the plague in ſome parts of Europe, and the occurrence of new diſeaſes—to obſervations concerning lunar influence, electricity, the popular modes of guarding againſt infection, veneſection, vapour or mephitic air, the revolution of certain comets—and to a poſtſcript containing ſeveral additional matters.

We obſerve, with ſome ſurpriſe, that Mr. W. has adopted the doctrine of *equivocal generation*, in order to account for the vaſt number of inſects and other animals which often diſtinguiſh the periods of peſtilential diſeaſes. The moſt eminent naturaliſts ſeem generally to have concurred in exploding this doctrine, for a conſiderable time paſt. Ever ſince the invention of microſcopes, the opinions formerly embraced, in favour of equivocal generation, both with reſpect to animals and plants, have rapidly declined. This inſtrument demonſtrates, that thoſe plants which formerly were ſuppoſed to be produced by equivocal generation, actually ſpring from ſeeds; and animals, in like manner, from ſexual intercourſe. It is true that difficulties ſtill remain with regard to the origin of the *animalcula infuſoria*, and ſome others of the claſs of the *vermes*; but the general analogy of nature, ſo far as diſcoveries hitherto go, ſeems to us greatly to outweigh ſuch difficulties.*

* The atheiſtical tendency of this tenet has been aſſerted with great confidence; and the Abbé Barruel affirms, that it was made inſtrumental, among other things, in the overthrow of the altar and of the throne in France. But of this we offer no opinion. [*See Memoirs of Jacobiniſm.*

There is reaſon to apprehend that ſome of Mr. W.'s readers may be led aſtray by his ſeeming predilection for the medical principles of Dr. Brown. The excellence of many parts of that ſyſtem, and the ſpecioufneſs of the whole, have gained admittance for ſeveral errors of the moſt pernicious kind.—The admired diſtinctions of *ſthenic* and *aſthenic* diatheſis, of *direct* and *indirect* debility, though ſo plauſible and captivating upon paper, often prove utterly indiſtinct and unavailing, when we approach the bed of ſickneſs, and teſt them by their practical merits. Practitioners find, every day, in the complicated character of diſeaſes, as they actually appear, the *ſthenic* condition in one part of the ſyſtem, and the *aſthenic* in another. The Brunonian doctrine of the uniformity of the operation of ſtimulants, and the miſapplication and abuſes of exhibiting them in improper caſes, or in exceſſive quantities, have frequently produced pernicious effects, and perverted the beſt remedies into the moſt deadly poiſons. It is mortifying to recollect the enormities of medical miſconduct into which that ſpecious ſyſtem has often betrayed its unwary and impetuous advocates.

We are ſorry to obſerve Mr. W.'s averſion to veneſection in peſtilential diſeaſes. As this is a practical queſtion of the higheſt importance, it behoves every perſon who undertakes to diſcuſs it, to form his opinions after mature inquiry and reflection, enlightened and rectified by the reſults of experience. In ſuch a diſeaſe as that which has ſo fatally ravaged the cities of the United States, we ſhould be extremely reluctant to give up the benefits to be frequently expected from blood-letting. No perſon will deny that this remedy may be abuſed to the moſt deſtructive degree; but the ſame may be aſſerted of every efficacious agent in the practice of medicine. In our malignant epidemic we often ſee violent univerſal excitement, and the greateſt tenſion of the arterial ſyſtem, continued many days; and after the death of ſuch patients, diſſection exhibits every mark of congeſtion, inflammation, and conſequent diſorganization, in many of the viſcera eſſential to life. We ſhould as ſoon believe blood-letting to be inadmiſſible in phrenitis or pneumonia, as in ſuch a ſtate of the ſyſtem. And actual experience enables us to declare, that in ſuch inflammatory forms of the epidemic, no other remedy has appeared to effect ſo much for the deliverance of the patient.

The alexipharmic uſe of perſpiration will ſucceed in the lighter forms of the diſeaſe. But we cannot agree with Mr. W. in aſſerting that all practitioners pronounce perſpiration,

if induced on the firſt ſeizure of the patient, to be the moſt effectual preſcription: for we are perſuaded, that in the early as well as in the later ſtages of the diſeaſe, it is often impoſſible to excite that diſcharge from the ſkin by any means which could be ſafely employed, and that, if excited, it would be often altogether unavailing, and ſometimes poſitively miſchievous.

The following quotation, from the concluding chapter, addreſſed to the learned ſocieties in America, Europe and Aſia, containing ſome general views of the ſubject, and propoſing a plan of regiſtering and communicating facts, we think proper to lay before the reader.

"It is demonſtrated that peſtilence, in temperate latitudes, is never an iſolated epidemic, but the criſis of a ſeries of epidemics; and we are furniſhed with the means of determining, unequivocally, the character of peſtilence in every caſe, on the following ſimple principles:

"If, on the appearance of peſtilence in a particular place, all other diſeaſes ceaſe, or take ſome of its predominant ſymptoms, that peſtilence is generated in that place, and dependent on the ſtate of the elements."

"It is impoſſible, on phyſical laws, that this criterion ſhould ever fail.

"Another criterion, almoſt infallible, is the prevalence of certain diſeaſes before and after the peſtilence. If peſtilence is immediately preceded by meaſles, affections of the throat, inflammatory or typhus fevers with anomalous ſymptoms, and eſpecially by catarrh, that peſtilence is an epidemic, produced on the ſpot, and only the *autumnal form of diſeaſe*—the other diſeaſes, preceding and following, being the vernal and hybernal forms, produced by the ſame general principle.

"Of the peſtilences which afflict mankind, in all climates, an immenſe proportion, probably nineteen twentieths, belong to this ſpecies. They are epidemics, beginning and ending at the command of the elements, under the co-operating influence of ſeaſons and local cauſes.

"Theſe epidemic peſtilences are more or leſs infectious, according to their violence, or the places where they exiſt. In cloſe rooms and narrow alleys they are dangerous; hence their mortality in fleets, camps, jails, and particular parts of cities. But the infection of ſuch diſeaſes extends to the diſtance of a few feet only, and is capable of diſſipation in a free air, ſo as to reduce the danger of attending the ſick almoſt to nothing. The ſame is true of diſeaſes of mere infection, not epidemic.

"Diſeaſes, dependent on infection only, are ſometimes in-

troduced into cities and hoſpitals, and occaſion conſiderable mortality. But they are propagated by contact or near approach only, and do not affect the character of other diſeaſes current in the place.

"The conſequence reſulting from theſe principles is, that *epidemic* peſtilence is not under human controul—but diſeaſes, propagated by mere infection, may be arreſted and ſubdued.

"The only means of avoiding or mitigating epidemic peſtilence, are, firſt, to withdraw the aid of local cauſes: ſecondly, to fit the body, by modes of living, to reſiſt its cauſes: and, thirdly, on failure of theſe, to remove from the place where it exiſts.

"The infection of all diſeaſes, even thoſe of ſpecific contagion, as ſmall-pox and meaſles, may be avoided by keeping at a diſtance from the diſeaſed. The infection of diſeaſes not ſpecifically contagious, as plague, yellow-fever, dyſentery and jail fever, may be nearly deſtroyed by free air, and cleanlineſs.

"With reſpect to the primary cauſes of epidemic diſeaſes, we are in the dark; but we are certain, from all hiſtory and modern obſervations, that the cauſes of epidemic diſeaſes among the human race, affect every ſpecies of animal and vegetable life.

"The opinions which I have ſuggeſted concerning the general cauſe, ſeem to have a foundation in the coincidence of epidemic diſeaſes with numerous electrical phenomena. At the ſame time, the reader will conſider theſe opinions rather as *conjectural* than *poſitive*. No certain concluſions can be drawn from an interrupted and imperfect ſeries of facts. More materials are neceſſary to enable us to erect a theory of epidemics which ſhall deſerve full confidence.

"The common doctrine of contagion is utterly inſufficient and unphiloſophical; for, if admitted, it never leads us nearer to the cauſe. If we trace the yellow fever to the Weſt-Indies, and the plague to Egypt or Conſtantinople, we are not an inch nearer to the ſource; for theſe diſeaſes are not always to be found in thoſe countries; and the people there are as much puzzled to find the ſource of them as the people of Great-Britain or America.

"If we trace theſe diſeaſes to the coaſt of Africa, or to Siam, we are as diſtant as ever from the ſource; for many times the diſeaſes are not to be found in thoſe countries, and ſeldom, indeed, are they found within the tropics, except among foreigners.

"Indeed, nothing is more common than for the yellow

fever to be *imported into the Weſt-Indies in veſſels from the United States.* When veſſels from northern latitudes have long paſſages, it often happens that ſeamen are ſeized with the diſeaſe, before they arrive at the iſlands; and the Weſt-Indians may often allege the diſeaſe to be *imported in ſuch veſſels, when it does not exiſt in the United States.*

" In ſhort, the doctrine of deriving all peſtilential diſeaſes from contagion or infection, were it not for the immenſe miſchief it does to ſociety, would not deſerve a ſerious refutation. Infection is a *ſubordinate cauſe* of the propagating of malignant diſtempers; but is itſelf an *effect* of ſome more general cauſe, whoſe force is a hundred fold more powerful and formidable than that of infection. I have, in condeſcenſion to popular opinion, ſtated the evidence of the domeſtic origin of the bilious plague, as it ſtands on the arrival or non-arrival of veſſels, and other facts of that kind. But I really conſider all this evidence as trifling, when compared with the phenomena of the diſeaſe itſelf, and its precurſors and attendants. The uniform appearance of other epidemics, as introductory to peſtilence, and manifeſting an eſſential change in the atmoſphere, with the numerous accompaniments of the plague and yellow fever, amounts to evidence of domeſtic origin, which leaves no room for cavil or controverſy.

" For the purpoſe of collecting facts, the only ſafe foundation of principles, and comparing the phenomena of diſeaſes and the elements, which occur nearly at the ſame time, in different countries, I ſincerely wiſh and requeſt, that all medical and philoſophical ſocieties would undertake to regiſter facts, and reciprocally to communicate them, by means of a general correſpondence. The facts to be regiſtered might be compriz-ed under the following heads:

" The time of the appearance and diſappearance of any epidemic diſeaſe, with its general hiſtory.

" The places where it firſt occurs to be deſcribed, in regard to land and water, height of the land, conſtruction of the city or ſtreets, poſition as to points of compaſs, woods, moraſſes, &c. The claſſes of people moſt generally affected.

" The general ſtate of the ſeaſons, as to heat and cold, drought and moiſture.

" The time of earthquakes, meteors, lumen boreale, and all ſingular celeſtial appearances—with unuſual tempeſts, eſpecially when accompanied with hail—all compared with the lunar phenomena.

" The appearance of unuſual inſects of all kinds, and any circumſtance attending them.

" Diſeaſes among cattle, ſheep, and other animals.

" Sickneſs and death of fiſh of all kinds.

" Volcanic eruptions, with the phenomena preceding, attending and following them.

" For the purpoſe of aſcertaining the lunar influence on the human body, or any diurnal influence, it would be deſirable that medical gentlemen ſhould note the days, and the hours of the day, when perſons are ſeized with particular diſeaſes, eſpecially epidemics—the hours of exacerbation and of paroxyſms in fever—the hours which are moſt fatal to the diſeaſed—and the time when convaleſcents are moſt apt to relapſe. —Theſe facts ſhould be compared with the poſition of the moon in her orbit, and eſpecially in regard to her perigee and apogee, conjunction and oppoſition, as alſo with the tides in the main ocean.*

" Should the principles unfolded in the preceding work prove to be well founded, they will lead to many important practical inferences.

" I. If peſtilential fevers never appear in the temperate latitudes, without certain precurſors, men will, with careful obſervations, be enabled to foreſee the danger, and prepare for it; or to uſe uncommon diligence in removing the ſubordinate local cauſes.

" II. If, in certain years, peſtilential fevers are more predominant than in others, and the condition of the elements fitted to produce them is univerſal over ſea and land, the fact is of no ſmall moment in maritime affairs. Double precautions will be taken in fleets, and in merchantmen bound on long voyages.

" III. If peſtilence is progreſſive, and firſt manifeſted in certain malignant fevers, the fact may be of great utility to large cities. The approach may be perceived in time to ſave the inhabitants by flight, if not by other precautions.

" IV. If no plague or yellow fever ever appeared in temperate climates, unleſs announced by other diſtempers, the magiſtracy may be enabled to diſtinguiſh when there is danger, and when not; and may avoid innumerable vexations to commerce, ariſing from the rigid execution of health laws, when there is not the leaſt occaſion.

* " The time of high and low water in rivers and bays may not be the true time in the open ſea—or of the greateſt and leaſt influence of the moon.

"V. But a moſt important uſe to be made of the facts here collected, will be, to guard public health from the ill effects of bad proviſions. If, in peſtilential periods, ſalt is leſs efficacious in preſerving fleſh; and, by means of a greater fermentation of the juices, fiſh and fleſh are more readily diſſolved by a putrefactive proceſs, more caution will be found neceſſary in packing and repacking them, and more care to avoid uſing it in a bad ſtate."

We cloſe our review of this work, in the hope that the author will continue to beſtow his attention on a ſubject which is ſtill far from being exhauſted, and to which his talents ſeem to be eminently adapted. It will give us great pleaſure to ſee this new path of hiſtory ſtill further explored, with the ſame ardour and ſucceſs which diſtinguiſh theſe volumes. Notwithſtanding all the indifference which literary and ſcientific labours too often meet from the public, we are confident this work will be peruſed by all who ſeek information on this momentous ſubject; and, at the ſame time that the benefits of it are diffuſed far and wide, that it will remain a laſting monument of the fervour of the author's zeal in the cauſe of truth, and of the vigour and comprehenſiveneſs of his mind.

ART. V. *A Sketch of the Riſe and Progreſs of the Yellow Fever, and of the Proceedings of the Board of Health in Philadelphia, in the Year* 1799: *to which is added, a Collection of Facts and Obſervations reſpecting the Origin of the Yellow Fever in this Country, and a Review of the different Modes of treating it. By* William Currie, *Fellow of the College of Phyſicians, and Member of the American Philoſophical Society, &c. Philadelphia.* Budd *and* Bartram. 8vo. pp. 112. 1800.

TWO American phyſicians, Dr. Currie of Philadelphia, and Dr. David Hoſack of New-York, are aſſociated in this performance; and we ſcarcely ever recollect to have ſeen, in a work of partnerſhip, a happier coincidence of opinions, or a more exact equipoiſe of powers exerted to ſupport a common cauſe. The expectation of ſeeing a large maſs of facts and of reaſonings on this intereſting ſubject, has been held out to the public, by theſe gentlemen, for a long time paſt; and it is reaſonable to conclude, that, in this

long interval, every fact and every argument has been ſo deeply revolved in their minds, as to render this publication the higheſt effort they are capable of making to eſtabliſh their doctrine. But we muſt confeſs, if this be the fruit of ſuch profound and mature reflections—if this exhibit the higheſt evidence of the contagiouſneſs and importation of the yellow fever, that we ſhall not heſitate to adhere to our former opinions.

When we reviewed the "Memoirs of the Yellow Fever for 1798," in Med. Repoſ. vol. ii. p. 312, by the former of theſe gentlemen, we delivered our opinion on the degree of value and importance which we ſuppoſed them to poſſeſs. Our readers will remember that we rated them very low on the ſcale of literary and medical merit. After the friendly remarks which we made, and the gentle criticiſms we offered at that time, we flattered ourſelves we ſhould not ſoon be preſented with another piece on the ſame ſubject, from the ſame hand, and breathing a ſimilar ſpirit. In this, however, the perſevering diſpoſition of Dr. C. has diſappointed us. He ſeems determined to give us an *annual* aſſurance of his conviction that yellow fever is both *imported* and *contagious*; and in doing this he manifeſts an eagerneſs and earneſtneſs worthy a better cauſe.

The principal part of the firſt thirty-two pages is devoted to what the writer calls *the ſketch*. The facts which Dr. C. produces in proof of the importation of the diſeaſe, in 1799, from the Weſt-Indies or from Hamburgh, would be conſidered, by an indifferent perſon, as rather meant to eſtabliſh its domeſtic origin. A chief object of the ſketch is to ſhew the inattention or careleſſneſs of the health-officers, in ſuffering ſuch intercourſe between the Weſt-India veſſels and the city of Philadelphia, as to introduce thereby the contagion of yellow fever; and alſo to diſplay the greater vigilance, judgment and foreſight of Dr. C. himſelf. There is, too, an imperfect account of the weather during the ſickly ſeaſon. We obſerve the writer, as in the former piece, is at variance with the health-office. He is clear the men in commiſſion do not manage matters rightly. Why has not the government of Pennſylvania, long ago, made the publiſher of this pamphlet a member or preſident of the Board of Health?

In the courſe of the next thirty pages, or more, Dr. C. aſſigns the reaſons at large which induce him to think the yellow fever contagious. Theſe are moſtly quotations from the trite and common accounts of diſeaſe and death, produced by ſeptic air and poiſonous vapours; but containing no ſtronger

evidence of ſpecific contagion than the opinions and declarations of the writers themſelves, and of this compiler. They tend merely to confirm the well-known doctrine of perſpired, excreted and corrupting matters in the alimentary canal, and in jails, hoſpitals, dirty dwelling-houſes, and eſpecially in ſhips and veſſels, turning to peſtilential miaſmata by chemical action among their inteſtine particles, and poiſoning moſt of thoſe who are expoſed to their action, except ſuch as are ſeaſoned to them. If ſhips were cleanſed, from keel to deck, as houſes are by neat inhabitants, ſeveral times a year, from cellar to garret, and by the ſame method of lime and ley, we ſhould hear very little of the naſtineſs and poiſon which, in the preſent ſtate of navigation, are ſo deſtructive within them. Why did Lord Anſon loſe abundance of men, and Capt. Cook none, by fevers, ſcurvies and dyſenteries, but becauſe the latter attended more to diet, regimen, and cleanlineſs of perſon, clothing and ſhip, than the former?

Toward the cloſe of the piece, Dr. C. attempts to diſcriminate between yellow fever and bilious fever, by ſymptoms which we have never been able to obſerve as diagnoſtics in practice. He contraſts the mild forms of the latter with the malignant and fatal character of the former; and ſuch a contraſt does, indeed, preſent a difference both of degree and event. There is a wide interval between a morbid ſtimulus of the ſtomach and inteſtines, which cauſes the diſcharge of large quantities of bile by vomiting and ſtool, and another which converts theſe diſcharges into an oozing of blood and a deluge of black matter. We can likewiſe help the Doctor to another diſtinction, equally practical and uſeful, which may poſſibly ſerve to illuminate the career of his future practice. Diſeaſes uſually confounded under the title of pneumonia, are known ſometimes to terminate happily by reſolution and expectoration; ſometimes fatally by effuſion of blood or other fluids into the cellular ſubſtance of the lungs. Dr. C. muſt deſert his principle, or call theſe diſeaſes by different names.—He expreſſes warm diſapprobation of ſalivating by preparations of quick-ſilver, and recommends oxygenated muriate of pot-aſh for charging the conſtitution with the principle of acidity.

Dr. C. aſſerts, that the doctrine of variable epidemic conſtitutions of the atmoſphere "is ſo palpably erroneous, that the New-York reviewers (as he is pleaſed to ſtile us) have given judgment againſt it." This is a groſs miſtatement of our opinion. The reaſoning which he quotes from our Re-

poſitory (vol. i. p. 76, 77), as intended to deny the exiſtence of ſuch conſtitutions, was only deſigned to prove that they do not depend upon the atmoſphere being ſurcharged with oxygenous air. As to the exiſtence of theſe epidemic conſtitutions, we have repeatedly and ſtrenuouſly maintained the affirmative; and the beſt apology we can offer for this miſtake, is to ſuppoſe Dr. C.'s mind unaccuſtomed to the intricacy of diſtinguiſhing between a fact itſelf, and an hypotheſis employed to explain it.

Supplementary to the pamphlet, we find an abſtract of the ſtatement, publiſhed in the newſpapers, of the ſhip General Wayne, about which there was much controverſy at New-York, in 1799; and a quotation of a letter aſcribed to Dr. Blane, containing his obſervations on ſickneſs in the Britiſh navy, which has been publiſhed in the gazettes alſo, tending to prove the contagious nature of the diſtemper. The evidence from theſe quarters is not more cogent or pointed than from thoſe already mentioned.

The pamphlet is concluded by two letters from Dr. D. Hoſack to the author, in which it is intended to be ſhewn, not only that the poiſon of yellow fever lay over from the preceding ſeaſon, but that perſons ill of the diſeaſe, on arriving from infected ports, were permitted to come to the city of New-York with their veſſels, without undergoing a regular quarantine.—We ourſelves were on the ſpot, and are ſatisfied the facts might have been ſtated in a more full and correct manner. For a more complete account of the effects wrought by the ſeptic acid vapours of putrefying beef than is here given, ſee the preſent volume of our work, p. 309. And that the particulars of the late John F. Roorbach's caſe, which has been very much talked of, and ſomewhat miſrepreſented, may be properly underſtood, we inſert, at length, the perſpicuous ſtatement thereof, drawn up by Tunis Wortman, Eſq. and communicated ſoon after the gentleman's death. It is as follows:

DEAR SIR,

AGREEABLY to your requeſt, I ſhall now furniſh you with ſuch of the particulars connected with the death of the late Mr. Roorbach, as have come to my knowledge or obſervation.

He removed from the city in the latter part of the month of Auguſt laſt. He had been abſent from town during the pe-

riod of at leaſt four weeks before he was taken with the fever. It is certain that he never viſited the city ſince his removal from it in Auguſt.

From the time of his removal to that of his illneſs, his health was apparently good. Mrs. Roorbach had, however, remarked a viſible decline in his ſpirits. She obſerves, that before his departure from town he had loſt much of his uſual cheerfulneſs and vivacity.

Should it be decided that the contagion was not received in the city, there are only three circumſtances to which, or one of them, his illneſs can with any probability be imputed.

At his removal to Long-Iſland, he was accompanied by a ſervant boy, of the age of about fourteen years. Not having occaſion for the ſervices of the boy, he was ſent to Middletown-Point, in New-Jerſey, in ſearch of his father, three days after his arrival at Long-Iſland. The boy went to the city in his way to Middletown-Point. He remained in the city about half a day, and then departed on his journey. He remained in New-Jerſey four days; and, not finding his father, returned to New-York. On his return, he tarried near two days in the city, and then again went to Long-Iſland. On the ſecond day after his return to Long-Iſland, he was taken with the fever, and remained ill for a conſiderable time before his recovery.

It is to be obſerved, that, during the illneſs of the boy, he was not lodged in the ſame houſe with Mr. Roorbach; but was furniſhed with an apartment, in the upper part of a building, diſtant at leaſt forty yards from the houſe in which the family reſided, and having no communication with it. I have always underſtood, and believe, that Mr. Roorbach did not viſit the boy at any period in which he was in danger; but, on the contrary, avoided ſeeing him until his recovery was conſidered as certain.

About a week after his removal, a barrel of beef was ſent to him from town. He was preſent at the opening of the barrel, which immediately afterwards took place. The beef was found unfit for uſe, and buried. A piece of it was boiled, under an idea that the oily part of it might prove ſerviceable for ſome purpoſes of family economy. It was afterwards deemed moſt prudent to bury the whole. Although unfit for uſe, I have underſtood that the beef was not, in a very great degree, offenſive. And neither Mrs. Titus, nor the two black perſons, who were moſt inſtrumental in opening the barrel, contracted any ſymptoms of diſeaſe.

As nearly as my memory ſerves me, and I believe that I am accurate, about a week previous to Mr. Roorbach's being ſeized with the epidemic, another barrel of beef or pork, ſuppoſed to have been thrown overboard, and to have floated from New-York, became lodged along the beach, between the houſe in which Mr. Roorbach reſided and that next adjoining. It was taken up by one of the neighbouring negroes, and placed at high-water-mark, within the diſtance of ſix or eight yards from the bank, and from the common foot-path of paſſengers. The object of the negro was to preſerve the barrel. He was actuated by that greedy purſuit of gain which is ſo common among men.

This foot-path was frequented every day by Mr. Roorbach. He walked paſt the fatal ſpot upon an average of at leaſt three times every twenty-four hours. I can teſtify, that of all the horrid ſmells I have ever experienced, that emitted by this laſt barrel was the worſt. Heaven only knows by what fatality it was ſuffered to remain ſo long unmoleſted on that ſpot; for it was not removed until the day of Mr. Roorbach's death, which was the third of October laſt.

He died on Wedneſday, the third of October, and was taken ill the Friday preceding.

This, Sir, is a ſtatement of ſuch circumſtances as I recollect. You can beſt determine which of them muſt have been the fatal cauſe.

Yours, with great reſpect,

T. WORTMAN.

December 11, 1798.

Dr. SAMUEL L. MITCHILL.

Dr. Hoſack writes warmly in favour of *lime-water*, as an excellent remedy in that ſpecies of black-vomiting in which the matter diſcharged reſembles coffee-grounds, and offers certificates of two phyſicians of New-York, S. Bard and J. Charlton, in favour of its ſucceſs. This is, doubtleſs, oftentimes a very ſafe and proper preſcription, and is a branch of Dr. Mitchill's doctrine of alkaline remedies, written early in 1797, and publiſhed in Med. Repoſ. vol. i. No. 2, appendix; wherein it is ſtated, that *lime operated by neutralizing ſeptic acid* in the alimentary canal. In the poſtſcript to the piece now before us, Dr. C. the editor, ſtates, on the authority of Dr. Cathrall's experiments, a confirmation of this; that lime-water really produces its ſalutary effects, *by neutralizing the corroſive acid*, which is generally contained in the ſtomach at

the time the black vomiting commences. After that piece above-mentioned had been perufed in Portland, the letter on the efficacy of alkaline remedies in fevers, written by Dr. Barker in confequence, though publifhed in Med. Repof. vol. ii. p. 147, had been received by the editors, and read publicly to the ftudents of phyfic in the New-York Hofpital, early in the feafon of 1798. And Dr. Lent's Differtation on the deftruction of peftilential fluids by alkalies, had been openly defended in Columbia-College at a ftill earlier day (May, 1798), and reviewed in our vol. ii. p. 96. Indeed, Grainger's cafe of obftinate dyfentery cured by lime-water, in 2 Phyf. and Literary Effays, p. 282, had been read to the young gentlemen in the hofpital library, and commented on by Dr. Mitchill, who was then in attendance there; and in his prefcriptions, this remedy, as well as weak folutions of *carbonate of pot-afh*, were commonly fet afide, and made to give place to a more agreeable and more efficacious alkali than either—*carbonate of foda* diffolved in water; a remedy preferable, on every principle, to lime-water.

Befides all this, as the fickly feafon of 1798 advanced, the floors of a number of private houfes in the city, and even the public room of the Bank of New-York, purfuant to Dr. Mitchill's ideas, had been fprinkled with folutions of pearl-afh, or weak alkaline ley, to abforb and neutralize noxious exhalations, and thereby act as correctors of peftilential air.

Such was the ftate of information among the citizens of NewYork, when fome uneafinefs arofe in Albany, left the yellow fever fhould break out in that city. The Common Council and the phyficians held meetings, and fuitable means of prevention were agreed upon. The printed proceedings had been forwarded to Dr. Mitchill by Dr. De Witt; and, with the intent of informing the gentlemen of that place what folid reliance might be placed on alkalies, Dr. Mitchill had written a fummary of the facts, in the form of an anonymous paragraph, which was inferted in the Daily Gazette of New-York, for September 6, 1798—a paper which he knew was read by one of his acquaintance, a gentleman of influence in Albany. And this is the paragraph alluded to in the "advertifement," as Dr. Hofack calls it, of Dr. Bard.

We find only one remarkable exception to the coincidence of opinions which prevails between the gentlemen who compofe the fraternity of authorfhip in this pamphlet. While Dr. H. *moft devoutly* recommends fweating, procured by

warm drinks, additional blankets, and, where theſe are not ſufficient, by heated bricks—Dr. C. declares as follows: "The ſweating treatment, by the means directed by Dr. Warren, of Barbadoes, and by cordial and ſtimulating remedies, and the external applications of heat and moiſture, whether with or without a load of oppreſſive bed-clothes, as far as I have been able to learn, proved not only unſucceſsful, but, in the majority of caſes that ſubmitted to it, was a ſpeedy though painful paſſport to the grave." The attempt, in a poſtſcript, to reconcile theſe contradictions, is utterly inſufficient.

On ſeveral occaſions we have found reaſon to obſerve an unexpected feebleneſs in the attempts to ſupport the doctrine of the foreign origin of the yellow fever. The pamphlet before us is not calculated to diminiſh this impreſſion. And though we reject, with ſtrong conviction, the influence of imported contagion, in the origin and propagation of that diſeaſe, we are perſuaded that theſe gentlemen have not made the moſt of their cauſe, and that facts and arguments *might be* adduced, to give it, at leaſt, a more plauſible colouring. For the ſake of the complete elucidation of truth, and the ſatisfaction of all parties, we ſhall be happy to ſee the opinion of the importers vindicated by ſome more nervous arm; of which we, as reviewers, as well as the future medical hiſtorians of America, may ſay,

"Si Pergama dextrâ
"Defendi poſſent, etiam hâc defenſa fuiſſent."

ART. VI. *Chemical Syllabus. By* John Vaughan, *M. D. Wilmington (Delaware).* Bonſal *and* Niles. 12mo. pp. 21. 1799.

IT ſeems that the Philoſophical Society of the State of Delaware has requeſted the compiler of this Syllabus to exhibit a courſe of chemical experiments, and that the piece we have in our hands is an outline of the plan, and an explanation of the technical terms employed in executing the buſineſs aſſigned to him. Of this it is ſufficient to ſay, that Dr. Vaughan adopts the French Nomenclature, without the American amendments.

This plan of inſtruction has ſucceeded beyond the ſanguine expectations of thoſe who firſt ſketched the deſign. A large

audience of both ſexes was collected to attend theſe lectures; and the ſubject has gained ſo much intereſt and popularity, that another courſe, and a regular ſucceſſion of theſe ſeaſons of inſtruction will doubtleſs be undertaken. It is to be hoped the ſociety will enlarge their ſcheme in future, and ſpeedily acquire ſuch maturity of arrangement as to render the benefits of their inſtitution permanent.

It is pleaſing to ſee the principles of ſcience familiarized to a large portion of the community, in a manner ſo cheap, eaſy and popular. It is juſtly the boaſt of modern times, that ſcience deſcends from the chairs of profeſſors, and from the pages of ponderous volumes, aſſumes every ſhape and accepts every ſtation, in order to accompliſh the great end of public inſtruction and utility. The exertions of Dr. Vaughan and his aſſociates deſerve our commendation; and we hope their example will be followed, with equal zeal and ſucceſs, in many other parts of the United States.

ART. VII. *The Midwives' Monitor and Mothers' Mirror. Being three concluding Lectures of a Courſe of Inſtruction on Midwifery. Containing Directions for Pregnant Women; Rules for the Management of Natural Births, and for early diſcovering when the Aid of a Phyſician is neceſſary; and Cautions for Nurſes, reſpecting both the Mother and Child. To which is prefixed, a Syllabus of Lectures on that Subject. By* Valentine Seaman, *M. D. one of the Surgeons of the New-York Hoſpital, and Phyſician Extraordinary to the Lying-in Ward in the Alms-Houſe. New-York.* Collins. 12mo. pp. 123. 1800.

UNDER the head of *Intelligence* (Med. Repoſ. vol. iii. p. 302), in our laſt number, we announced this work. Its object and contents are ſo fully ſet forth in the title-page, which we have inſerted at full length, that there will be leſs reaſon to deſcend to particulars, in giving an account of it. We muſt, however, obſerve, that it is very well calculated to anſwer the purpoſes of Dr. Seaman, whoſe zeal in the benevolent work of inſtructing *females* in the obſtetric art, entitles him to a good ſhare of applauſe. We alſo expreſs our opinion, that ſuch *women* as intend to qualify themſelves for af-

ſiſting others, in caſes of pregnancy and labour, may conſult this *Monitor* with ſatisfaction and advantage; and they whoſe delicacy is too much affected to look to accoucheurs for advice in their own caſes, may contemplate themſelves before this *Mirror*, without bluſhing or embarraſſment.

MEDICAL & PHILOSOPHICAL NEWS.

DOMESTIC.

FEVER *and* DYSENTERY *produced by the* SEPTIC VAPOURS *of* PRIVIES.

BY a late ordinance of the Corporation of New-York, the inhabitants of the eaſtern ſide of the city were directed to have the pits or ſinks of their privies, many of which were filled, and overflowing with human excrement, emptied and cleanſed by or before April 1, 1800. This foul work was chiefly undertaken by negroes, who entered upon it by the lure of very high wages. Of theſe black night-men the greater part have been ſick, and ſome have died. The ſymptoms they experienced from the effluvia of the human ordure to which they were expoſed, were *catarrhs*, and *remarkable redneſs and inflammation of the eyes*; frequent *nauſea*, *vomiting*, and *loſs of appetite*; and *pains in the belly*, *griping*, *teneſmus*, and *bloody ſtools*, or *dyſentery*; to which were added, *febrile commotion* in the conſtitution, of various degrees of violence, according to conſtitution and other circumſtances, ſometimes terminating in death.—Theſe ſymptoms accord moſt exactly with the poiſonous effects wrought by the *acid* vapours of putrid beef, of which we gave an account in our preſent volume, p. 309, and are highly inſtructive; evincing, at once, their virulence, their acidity, and, of courſe, their deſtructibility by alkaline ſalts and earths. RAMMAZZINI, who lived at Padua, has written a chapter, in his *Treatiſe de Morbis Artificum* (cap. xiii.) on the diſeaſe of thoſe whoſe employment is the cleaning of privy-pits. The principal ſymptom he mentions is an inflammation of the eyes, often terminating in blindneſs; and this he aſcribes to the operation of a volatile acid; *(acidum volatile eſſe quod hujuſmodi camarinâ commota, exſpiret, mihi proclive eſt arbitrari, &c.)* He quotes the blackening of copper, ſilver and braſs, as well as of oil-paintings, in ſupport of his opinion. It is probable, however, that he had not inquired very extenſively into the ſubject, or he would have acquired the

knowledge of as many additional facts as have fallen under our notice. The reaſon why human fæces and their exhalations, though noxious, are, however, not ſo much ſo as the crude and undigeſted ingredients of food, in a putrefcent ſtate, would be very obvious and eaſy to aſſign. The alimentary maſs is mingled with a portion of *muriate of ſoda* (common ſalt), and of *bitter of ſoda* (fluid bile or gall), both of which moſt powerfully neutralize the ſeptic acid, or exciting cauſe of the inconveniences complained of (ſee Med. Repoſ. vol. ii. p. 292), and leſſen its deſtructive qualities.

OXYDATION *of* SILVER *by the* SEPTIC ACID *contained in the* ABDOMEN *of a Perſon dead of* ENTERITIS. *In a Letter from Dr. D. Hoſack, Profeſſor of Materia Medica and Botany in Columbia College, to Dr. Mitchill; dated New-York, Feb.* 23, 1800.

SIR,

Yeſterday afternoon, in company with Dr. Hamerſley, I examined the body of a young man, who died the night before, in conſequence of an inflammation of the bowels. Upon opening the belly, we found in its cavity about three pints of fluid, of a greeniſh colour, and of an intermediate conſiſtence between ſerum and pus. In the courſe of a few minutes, while examining the ſtate of the viſcera, I experienced a diſagreeable and ſomewhat painful ſenſation in my hands and fingers, ſimilar to the heat and burning excited by immerſing the hands in ſtrong brine. This remained a conſiderable time (not leſs than two hours), notwithſtanding I had carefully and repeatedly waſhed my hands with ſoap and water. This liquor proving cauſtic to my hands, I dipped into it a piece of ſilver, which was inſtantly changed from a pure white to a yellowiſh colour, approaching the hue of copper. As you have latterly been much devoted to an inveſtigation of the chemical qualities of the animal fluids, as connected with diſeaſe, I beg leave to encloſe you the piece of ſilver* which was the ſubject of this experiment.

* This was 1-16 of a Spaniſh dollar piece, coined in 1760, in the reign of Ferdinand the ſixth. By expoſure to a red heat on an iron ſhovel, with ignited charcoal, it turned to a leaden colour in leſs than two minutes; and the prominences or baſs-reliefs of the coin were of a deeper leaden colour than the other parts. This colour was not wholly changed to a ſilver hue again, by being heated red-hot with charcoal and pot-aſh, but remained conſiderably duſky.

Leſt it ſhould be conſidered as a mere ſtain imparted by the colour of the liquor, I add, that it is of a different colour from that of the fluid in which it was immerſed; and it has been ſince waſhed with water, without loſing any of the colour you now obſerve it to poſſeſs. It may not be irrelative to add the following account of the appearances exhibited by diſſection. Immediately upon opening the cavity of the abdomen, a great quantity of gas was diſcharged, and was extremely offenſive. The *omentum* exhibited a great degree of inflammation, and, in ſome portions of it, was in a ſtate of ſphacelus; and inſtead of lying looſely over the inteſtines, it adhered to the latter very generally.

Upon removing the omentum, we found the inteſtines in a ſimilar ſtate—their veſſels very much diſtended with blood, and, in ſome parts of them, an appearance of mortification. In addition to theſe circumſtances, we found the inteſtines adhering to one another with conſiderable firmneſs; and, upon carefully ſeparating them, obſerved a layer of matter, apparently compoſed of pus and lymph, which had united them, and had become ſomewhat membranous. The other viſcera of the belly appeared to have undergone no important change.

I am, Sir, yours,

DAVID HOSACK.

Dr. S. L. MITCHILL.

CULTURE *of the* VINE *in the* UNITED STATES.

During fifteen years, Peter Legaux, of Springmill, thirteen miles N. N. W. of Philadelphia, has been engaged in cultivating vines. He propagates the kinds which, in France, produce the *Champagne*, *Burgundy* and *Bourdeaux* wines; and that which, at the Cape of Good Hope, affords the *Conſtantia* wine. In the year 1793 he had his firſt vintage from the three former, which are now naturalized to the American ſoil. Mr. Legaux declares it as the reſult of his experience, that the 40th degree of latitude N. on the atlantic ſide of America, in point of vegetation and general temperature, is like the 48th or 49th in Europe. His vines have ſo thriven and increaſed, that they have afforded not only liquors to drink, but, at this time, they abound with ſhoots for cuttings, to plant and rear other vineyards. For the purpoſe of encouraging the cultivation of vines, the Legiſlature of Pennſylvania, on the 7th of March, 1800, paſſed an act, appointing fifteen Commiſſioners to procure ſubſcriptions for raiſing a capital in ſhares, to be applied to the furtherance of this ob-

ject. After one thouſand ſhares are ſubſcribed, the company is to be incorporated. Each ſhare is fixed at twenty dollars. The Commiſſioners expreſs their conviction, that the Americans have it in their power to ſupply themſelves with wine of their own growth, equal in ſtrength and flavour, and ſuperior in wholeſomeneſs and purity, to any which they can import. The means by which they are attempting to accompliſh this are, firſt, by raiſing in their own vineyards a conſtant ſupply of the plants, of the beſt ſpecies of vines, to be diſtributed abundantly, and on eaſy terms, throughout the country. Secondly, by training a number of vine-dreſſers, who, having acquired the neceſſary ſkill, ſhall be capable of attending to, and teaching the cultivation of the vine, in any part of the country to which they may be called; and giving inſtruction in the arts of making wine, brandy and vinegar, from the juice of the grape.

OBSTINATE ERUPTION *over the whole* SURFACE *of the* BODY *cured by* CHALK *(Alkaline Earth, or Carbonate of Lime).*

I was taught, thirty years ago, ſays Dr. Barker, of Portland, that mercury was the greateſt corrector of the animal fluids and humors in diſeaſe, and have made a liberal uſe of it in my practice; but I never could be convinced that it poſſeſſed any ſuch power. I have been induced to believe that even *chalk* is a much greater corrector and purifier of the fluids and humors than quick-ſilver.—The following caſe ſeems to corroborate the idea.

A child, fifteen years ſince, when about twelve months old, was obſerved to have a troubleſome eruption upon the face, which ſoon ſpread over the whole body, attended with itching and inflammation, diſcharging a corroſive humour, reſembling what is called tinea, or herpes. Cathartics, antimonials, lotions and unguents, were tried in vain. Mercury was then given for a conſiderable time, even to raiſe a ſalivation; but the complaint increaſed, and it was given up as incurable. It was greatly emaciated, though its appetite was good. In this hopeleſs ſituation it remained until eighteen months old; no medicine having been given for two months.—Its death was daily expected—nay, deſired.

At this critical juncture a piece of chalk was put into its hand, to amuſe it, and appeaſe its moans. This it readily eat, and cried for more, which was given; and it could not be pacified with leſs than two ounces in a day. This quan-

tity it daily conſumed for more than a month, when the corroſive liquor had ceaſed to ooze from the ſores, and the ſcabby eruption entirely diſappeared; ſo that, in a ſhort time, the child's health was regained, and it has ever ſince enjoyed that invaluable bleſſing.

I have ſeen ſeveral very ſimilar recoveries, from the uſe of chalk and lime-water, where mercury and other remedies had failed. As a collyrium, I find lime-water to be much more efficacious than any article I ever employed. It has effected ſome extraordinary cures, when the uſually reputed lotions have proved ineffectual, and even a mercurial ſalivation; ſo that I feel a perſuaſion that alkalines are of much greater utility, as correctors of vitiated fluids and humours, than mercury, antimony, or any other uſually reputed article.

Boston Prize-Medal.

The prize-medal, offered ſome time ſince by the Humane Society of Boſton, for the beſt collection of facts on yellow fever, has been adjudged to Samuel Brown, M. D. of that town; and his Diſſertation, we are glad to learn, has been publiſhed by direction of the ſociety.

Medicine.

M. Blanchet, of Quebec, intends ſhortly to publiſh a work, entitled, *Diſquiſitions on Medicine*, or *the Application of Chemiſtry to Phyſic*. In this piece the author purpoſes, among other things, to inveſtigate how far the laws of chemical action are applicable to explain the phenomena of *organic* matter.

Perpetual Sea-Log, *for determining, with greater certainty, the* Longitude.

A machine has been invented, by Mr. Gould, for meaſuring, with more correctneſs than by the common log, the velocity of a ſhip's paſſage through the water. It is conſtructed entirely of braſs, and conſiſts of a hollow cylinder, through which the water can flow with the greateſt eaſe; in the centre of which is hung an axis, with three arms and wings, fixed to ſuch a degree of obliquity, that they are made to revolve by the preſſure of the water on their ſides as it paſſes through. The motion thus produced is communicated to a connection of wheels and pinions, turning ſlower and ſlower, in rates ſo proportioned, that one revolution of the firſt meaſures 1-10th of a ſea-mile—of the ſecond, one whole mile—of the third,

ten miles—and of the fourth, one hundred miles, &c. in a decimal ratio. This invention is ſaid to obviate all objections made to the common log, except as to the meaſurement of currents, and to be little liable to get out of order. As it is kept continually overboard, all that is neceſſary is to take it in for inſpection at every new courſe. A patent has been obtained for it.

The EARTH *beſprinkled with a* YELLOW POWDER, *miſtaken for* SULPHUR.

On Saturday, the 12th of April, 1800, the weather, from being overcaſt in the morning, in the ſouthern part of the State of New-York, became, toward noon, rainy and ſtormy. The ſtorm increaſed at evening, and there was conſiderable lightning during the night. Much rain fell; and it was remarked, on Sunday morning, that the ponds and puddles of water in the country, both on Long-Iſland and in New-Jerſey, were covered with a yellow ſcum or powder, having ſome reſemblance of ſulphur. This appearance was alſo very much noted in the ciſterns and reſervoirs of water in the city of New-York, and on the pavements generally: and it was currently reported, by ſome perſons, that there had been a ſhower of brimſtone. It is moſt probable, however, that the ſubſtance was the *farina fœcundans* of vegetables, as ſeveral ſpecies of willow (ſalix), birch and alder (betula), and maple (acer), were at that time in bloom; and that the pollen of their flowers was wafted about thus extenſively by the wind. It was affirmed by ſome, that the powder was inflammable, and ſmelled like ſulphur on being burned; but this we believe to be a miſtake, as on our trials with it, no ſulphureous ſmell or trace of any kind was obſervable. On the contrary, it appeared, on being examined with the microſcope, to be an organic ſubſtance, exactly reſembling vegetable pollen.

ADVANTAGES *of* STUDYING PHYSIC *in* AMERICA.

The medical information to be acquired in the ſeminaries of America is very great. New-York, Philadelphia, Cambridge, Baltimore and Hanover, have their inſtitutions for promoting the knowledge of medicine. And beſides the libraries and lectures which ſtudents may frequent at theſe places, the opportunities of practical inſtruction which the plague or yellow fever, and the endemic diſtempers of the hot ſeaſon, afford, are uncommonly great; while in New-York and Phi-

ſadelphia, the benefits of clinical inſtruction, at the reſpective hoſpitals, under RODGERS and RUSH, are added to the ſtock of means. With all theſe opportunities, which the weſtern continent ſo invitingly holds out to her citizens, is it expedient that the American youth ſhould ſo commonly go to Europe for medical education? After acquiring what the ſchools afford them there, our young phyſicians too often return to America, inſtructed in almoſt all things but thoſe which it moſt becomes them to know; viz. the cauſes, ſymptoms, prevention and cure, of the diſeaſes of the country in which they are to live and to practice. How can a citizen of New-York or Philadelphia learn the mode of diſtinguiſhing or treating a yellow fever from profeſſors who never ſaw a caſe of ſuch a diſtemper in their lives? It would be much more to the purpoſe, if the young men of Great-Britain, particularly thoſe who are preparing for foreign ſervice in the army and navy, were to come to America for medical education, than for our youth to take hazardous and expenſive voyages, for this purpoſe, to that iſland. We are the more explicit in theſe remarks, becauſe we conſider the ſubject as important, and becauſe we are perſuaded that the medical opinions, publications and inſtitutions of this country, are by no means duly appreciated. The conſequence of this is, on their return from Europe, theſe American Doctors of foreign nurture and education are ſo totally uninformed of what is going on upon the great ſtage of medical action in the United States, that they are forced to commence a new career of ſtudy, to render them fit for underſtanding the climate, diſeaſes and remedies of the land in which they were born. Candour muſt admit, that the doctrine of fever, except where the exploded notions of atony and ſpaſm prevail, is well underſtood and taught in America.

FARRAGO *of* INGREDIENTS *in the* NITROUS *and* NITRIC ACIDS, *whereby they differ from the* SEPTIC ACID.

M. Carendeffez has found that the modification of the ſeptic acid, called in the ſhops, and in medicine, *nitrous* and *nitric*, is truly a compoſition of ſeveral acids. He has confirmed the account of the conſtitution of theſe adulterated forms of ſeptic acid, as ſtated in our vol. ii. p. 236 and 237, and entered into ſome further detail of particulars. M. Carendeffez affirms, that ſalt-petre (ſeptite of pot-aſh), from the manner of its preparation, &c. almoſt always contains a portion of common ſalt (muriate of ſoda); that when ſulphuric acid is

poured upon the ſalt-petre of trade and the ſhops, the muriatic acid being the moſt eaſily diſengaged and moſt volatile, riſes firſt in the form of a vapour, in which this acid predominates; and that afterwards the ſeptic acid vapours, which come over into the receiver, bring a portion of the ſulphureous acid along with them. He has uniformly obſerved, that every parcel of nitrous acid which he has examined, both that diſtilled by himſelf and that prepared by others, contained either muriatic acid or ſulphureous acid, or both. In order to prove the preſence of muriatic acid, M. Carendeffez adds the nitrate of ſilver, the metallic part of which is immediately precipitated with the muriatic acid, in the form of a luna cornea—and to demonſtrate the preſence of the ſulphuric acid, he adds either acetate (ſaccharum ſaturni) or nitrate of lead, the metallic part of which falls down in the form of a ſulphate of lead. To theſe admixtures of other acids M. Carendeffez aſcribes, in a good meaſure, the diminution of the activity and virulence of the native ſeptic acid, whereby it becomes capable of being employed as a medicine; though, from the varying and uncertain proportions of the ingredients which compoſe it, there will be a proportional variety and uncertainty in its effects, when internally adminiſtered.—The more nearly the nitric acid approaches to purity, the more powerfully he finds it operated upon by ſilver, copper and tin, notwithſtanding its ſtrength and concentration, provided its water of liquidity be not too much diminiſhed.

From all theſe experiments one truth is eſtabliſhed, and grows more and more bright—that the original and unmixed ſeptic acid, as formed in the incipient ſtages of putrefaction, and *before* its combination with pot-aſh into nitre, is exceedingly different in its qualities from that MEDLEY OF MATERIALS which enter into the conſtitution of the nitrous and *nitric* acids, during and *after* their ſeparation from that alkali.

MARYLAND SOCIETY FOR PROMOTING KNOWLEDGE.

A letter from Maryland, of March 3, 1800, mentions the aſſociation of a number of perſons in Baltimore into a ſociety, or an academy, which has adopted the title of "The Maryland Society for promoting Uſeful and Ornamental Knowledge." This is agreeable intelligence. We hope the members will perſevere in their undertaking, and that ſucceſs and uſefulneſs will crown their labours.

PATENT *for* DIMINISHING EXPENSE *and* FRICTION *in* MACHINES, *by means of* LEAD.

Letters patent have been recently obtained, by William Shotwell, of Bridgetown, New-Jerſey, for his diſcovery of a repulſive power in lead, and in alloys of lead and tin, whereby they are leſs ſubjected to wear and waſte by friction than iron and the harder metals are. The patentee purpoſes to avail himſelf of this repellant quality of lead, to leſſen attrition and coſt in the blocks of pullies, in the boxes of carriage wheels, in the ſupports for mill-gudgeons, and in ſimilar caſes. Experiments which have been made warrant the belief, that Mr. Shotwell's diſcovery may be applied to a multitude of uſeful purpoſes.

PRIZE-QUESTION.

The *Philadelphia Medical Society*, deſirous of increaſing the ſtock of uſeful medical knowledge, have determined to offer a medal, of the value of ſixty dollars, for the beſt diſſertation in anſwer to the following queſtion: "What are the effects of the following medicines upon the human body, eſpecially upon the pulſe; viz. hyoſcyamus niger (black henbane), datura ſtramonium (thorn-apple), conium maculatum (hemloc), camphor, amber, muſk, digitalis purpurea (fox-glove), ſcilla maritima (ſea-ſquill), rhododendron maximum (an indigenous American plant, called mountain laurel), and the principal preparations of lead."

Diſſertations on this ſubject, competing for the prize, and written either in the Engliſh, French, or Latin languages, muſt be forwarded (poſt paid) to the ſecretary of the Philadelphia Medical Society, on or before the firſt Saturday in February, 1802. To each of the diſſertations a motto muſt be prefixed, and the ſame motto muſt be put upon the back of a ſealed letter, containing the name of the author. All the diſſertations, excepting that to which the prize ſhall be adjudged, will be returned to any place that may be directed, with the letters which accompanied them unopened. Thus the names of unſucceſsful candidates will be known only to thoſe to whom they may themſelves communicate them.

By order of the Society,

BENJAMIN S. BARTON,
JOHN MOORE,
GEORGE LEE.

Philadelphia, March 1, 1800.

Request to Patentees.

As many inventions are making in the United States, which are ſecured to the proprietors by letters patent, according to the act of Congreſs, the editors conceive the Medical Repoſitory would be a good medium for patentees to make their diſcoveries extenſively known. They therefore requeſt, that ſpecifications of patents may be ſent them, free of expenſe, from all parts of the nation, for inſertion. In attending to this branch of information, both the intereſts of the patentee and of the public will be attended to, as there can ſcarcely be a more convenient vehicle of intelligence than this work.

Manufacture *of* Neutral Salts *in* New-York.

Conſidering the utility and elegance of the neutral ſalts which have ſoda for their baſis, it muſt be agreeable to our readers to learn, that M. De Carendeffez, formerly of St. Domingo, prepares ſeveral of theſe wholeſome and excellent medicines in the city of New-York. He obtains his ſoda by the decompoſition of ſea-ſalt with oxyd of lead, and thereby procures, in the ſame proceſs, muriate of lead, or patent yellow. The ſoda thus ſeparated is afterwards ſuffered to combine with fixed air, into a *carbonate of that alkali*, which is very pure and beautiful. M. Carendeffez, who likewiſe ſeparates the phoſphoric acid from its calcareous connection in animal bones, combines it with the mineral alkali, into *phoſphate of ſoda*, one of the more ſafe, pleaſant and efficacious of the neutral ſalts. He decompounds ſea-ſalt by means of the carbonate of pot-aſh, and thus obtains, by a double elective attraction, carbonate of ſoda and muriate of pot-aſh (ſalt of Sylvius); after which the muriate of pot-aſh, being decompoſed by ſulphuric acid, yields ſulphate of pot-aſh, or vitriolated tartar. He further decompoſes tartrite of pot-aſh, or cream of tartar, directly by the ſulphuric acid; and with the tartaric acid ſo obtained, he, with the aid of ſoda, produces tartrite of ſoda, or Rochelle ſalt (ſel de ſeignette).—We congratulate our medical brethren on the domeſtic manufacture of theſe combinations of ſoda, with the carbonic, phoſphoric, and tartaric acids, as we conſider them among the moſt valuable articles of the materia medica, againſt the diſtempers of the hot months in our climate; a time of the year when the ordinary ſupplies of theſe ſubſtances, imported from Europe, have been frequently ſought, at the ſtores of the druggiſts, in vain. We wiſh ſucceſs to M. Carendeffez's manufacture, and hope the wholeſale and retail dealers

or the articles enumerated, will give him encouragement. He alſo decompounds the muriate of ſoda by the ſulphuric acid, and prepares both *ſulphate of ſoda* (Glauber's ſalt) and muriatic acid. We have ſeen ſome cryſtallizations of borate of ſoda (borax), which had been very nicely purified by the ſame operator.

MEDICAL GRADUATION *in* DARTMOUTH COLLEGE.

At a commencement held at Dartmouth College, on the 28th of Auguſt, 1799, the degree of M. B. was conferred on the following candidates, to wit:

Nathan Noyes, of Newbury, Maſſachuſetts. Inaugural Diſſertation on Febrile Heat.

Daniel Adams, of Townſend, Maſſachuſetts. Diſſertation on the Principle of Animation.

Abraham Hedge, of Woodſtock, Vermont. Diſſertation on the Medicinal Uſe of Water.

PECULIARITY *of the* MALE PARENT *manifeſting itſelf in his* OFFSPRING.

A man lately reſided in New-York, who, beſides the *four* fingers belonging to the human hand, poſſeſſed, on each hand, a fifth, which was connected with the hand at the junction of the little finger to the metacarpal bone. From this ſpot it grew out laterally, at about a right angle from the outſide of the hand and from the little finger. It was ſmaller than that finger, but was furniſhed with a nail. The wife of this man was a healthy woman, without any bodily peculiarity: yet the children ſhe bore, though healthy and well-made in other reſpects, had the *monſtrous appendages* to their hands, in the ſame places, and after the ſame manner, that their father had.

SPECIMENS *of* SULPHUREOUS MINERALS *from the* SOLFATARRA.

The Mineralogical Society of New-York has received ſeveral ſpecimens from Italy, which illuſtrate the formation of ſtrata of gypſum. 1. Amorphous native brimſtone. 2. Cryſtallized ſulphur. 3. Brimſtone mingled with calcareous earth, in the form of a ſulphure of lime, or calcareous hepar. 4. Oxygenated ſulphur combined with lime into a true plaſter-ſtone, or gypſum. In this latter are ſtill to be ſeen bits of ſulphur in their native ſtate, not yet acidified, and filling up the holes of the plaſter of Paris. Thus, in this ſeries of ſpecimens, can it be ſeen how ſtrata of *carbonate of lime*, or

common limeſtone, in the Solfatarra, ſhall, by the oxygenation of the ſulphur in its immediate vicinity, part with its fixed air by the powerful attraction of another acid, and turn to a *ſulphate of lime*, or plaſter of Paris.

Sicilian Wheat.

Through the generoſity and public ſpirit of Mr. Roulet, two barrels of wheat, juſt imported from Palermo, have been preſented to the Agricultural Society of New-York. They are of the kinds called, in Sicily, *tritico tenero* and *tritico duro*. As the cultivation of theſe ſorts of grain may have a tendency to improve our crops, by introducing new and valuable varieties, the ſociety have directed them to be cultivated, and ordered that Meſſrs. John Stevens, Daniel Ludlow, Ezra L'Hommedieu, and Samuel L. Mitchill, make experiments on their growth and productiveneſs, and report the reſult to the Society.

Facts *in* Natural History—*noted during the Summer and Autumn of* 1799, *by S. L. M.*

1. *A Locuſt-Tree putting forth Bloſſoms a ſecond Time, after having been ſtruck by Lightning.*

A locuſt-tree (robinia pſeud-acacia), after flowering-time, was ſtruck with lightning. The ſtroke was very violent, and, apparently, deprived it of life. The leaves withered, and the foot-ſtalks dropped off. After ſome days, however, the tree ſhewed tokens of returning animation, and new buds began to unfold. From theſe buds a freſh crop of leaves proceeded; and, what was exceedingly remarkable, ſuch was the peculiar condition of this tree, *that a ſecond ſet of bloſſoms made their appearance, many weeks after the firſt had withered and been ſhed by this and the neighbouring ones.* Since this ſecond exertion, which, it was apprehended, would have exhauſted the remaining powers of the tree, it continued to ſprout and grow annually, and was in a thriſty condition three years after the accident.

2. *Regeneration of the Bark of Apple-Trees.*

In general, to ſtrip off the bark of trees is to kill them: and yet there is a time of the year when apple-trees (pyrus malus) may be peeled from their roots to their boughs, on all ſides, without ſuſtaining any damage from the operation. The experiment was made this ſeaſon (1799) upon one of

my apple-trees, whoſe whole body was deprived of its covering of bark, and whoſe branches, nevertheleſs, retained all their leaves and fruit. It is now two months ſince the tree was laid bare, and an entire new coat of bark has been formed, which inveſts the wood on every ſide; and it appears as healthy and vigorous as ever. The ſeaſon for doing this is when the days are longeſt—that is, toward the end of June. A tree, peeled laſt ſummer, has lived over the long and ſevere winter of 1798-9, and is in no reſpect injured. Another, which was denuded in June, this year, has reproduced its bark completely (September), and is as full of fruit and leaves as if nothing had been done to it. There is no doubt that an orchard might be treated in this manner with perfect ſafety, if the operation was well-timed. The farmers ſay it will make old trees young again. But I own, though I have ſeveral times been witneſs of the harmleſſneſs of the practice, it looks to me ſtill like a very violent and hazardous remedy.—The experiment, however, demonſtrates a moſt remarkable power in the vegetable economy.—Whether other trees may be thus decorticated with ſafety, I have not yet learned.

3. *Retrograde Motion of Sap in a Wild Cherry-Tree.*

On my farm, two wild cherry trees (prunus virginiana) grew within two feet of each other. The body of one of theſe trees was forked, and a branch of the other grew between the ramifications. In the progreſs of vegetation the three boughs came into contact, and grew faſt together. The inoſculation was ſo complete, that the foreign branch appeared to have united firmly with the tree by which it was embraced at the bifurcation. To ſhew whether or not this was truly the caſe, the tree with which the branch of the other had formed this connection was *girdled*, or deprived of a ring of bark near its root. The part of the tree below the girdle died, and the roots ſoon became juiceleſs; but the top continued to grow, and to bear leaves and fruit for ſeveral years after; its nouriſhment being furniſhed wholly from the foſter-branch deriving ſap from its own neighbouring trunk, and ſupplying the tree with which it was now conſolidated. But this was not all:—The diſtance from the place of the branch's inſertion in the body of the tree to the place where it was girdled, was about eight feet: yet down to that place, or a little above it, the body continued to live and grow, and to put forth ſhoots. This muſt have been cauſed by a retro-

grade motion of the ſap, through all that diſtance from the point of the union between the branches above.—Something of the ſame kind has been known to happen in other trees.

4. *On the Multiplicative Power of Fiſhes.*

In 1790, Uriah Mitchill, Eſq. High-Sheriff of Queen's County, and myſelf, went to Rockonkoma Pond, in Suffolk County, a diſtance of about forty miles, in a waggon. The object of our journey was to tranſport alive ſome of the *yellow perch*, with which this body of water abounds, to Succeſs Pond, in the town of North Hempſtead. We took about three dozen of thoſe which had been wounded moſt ſuperficially by the hook, and were ſo fortunate as to diſmiſs all of them but two, into Succeſs Pond, in a condition vigorous enough to ſwim away. We were enabled to do this by filling a very large churn with the water of Rockonkoma Pond, and putting ſo few fiſhes into it, that there was no neceſſity of changing it on the road, and afterwards driving ſteadily on a walk the whole diſtance, without ſtopping to refreſh either man or horſe. In two years theſe few fiſhes multiplied ſo faſt, and became ſo numerous, that they might be caught with the hook in any part of the water, which is about a mile in circumference! What prodigious increaſe in their new ſituation! Whereas, if they had remained in the water of their nativity, already ſtocked very full, their offſpring would have been comparatively inconſiderable. So true is it of theſe, as well as of human and other animals, that nothing limits their increaſe and multiplication but the want of ſubſiſtence.—When Succeſs Pond is ſupplied with as many yellow perch as it can feed, either there will be fewer eggs ſpawned and hatched, or, of theſe little creatures, a ſmaller proportion will become grown fiſhes. A vaſt number of them, like the children of the Chineſe and other fully-ſtocked nations, muſt periſh for want of food, and thereby their multiplication muſt be limited.

AIR PRODUCED, WITHOUT LIMITATION, *from* WATER *by* FREEZING.

Dr. Prieſtley has waved the objection to Dr. Mitchill's idea of the identity of phlogiſton and hydrogen, provided the latter be not made a component part of water. Dr. Prieſtley has nearly completed a courſe of experiments on the freezing of water. He finds this proceſs far more effectual in getting air from it than the Torricellian vacuum, which he has chiefly

uſed hitherto. He obſerves, if the water be frozen ever ſo often, a quantity of air will be got from it, and the harder the froſt, the more air is produced. To appearance, this proceſs has no limit; ſo that the *whole* of the water may be converted into air, and this air is *phlogiſticated*, or chiefly ſo.

Transactions *of the* Academy *of* Medicine.

The academy of medicine in Philadelphia, we are informed, will publiſh a volume of tranſactions in a few weeks. It will conſiſt altogether of documents and facts calculated to aſcertain the origin and beſt modes of treating the yellow fever.

Remedy *for* Epilepsy.

Profeſſor Ruſh has lately ſucceeded in curing a boy of epilepſy, by giving him two grains of ſaccharum ſaturni (acetate of lead) three times a day. He has, beſides, ſuſpended the fits for ſeveral weeks, by the ſame doſe of that medicine, in two patients in the Pennſylvania Hoſpital. By creating ſome diſorder in the bowels, the remedy was prevented from being increaſed in the latter caſes, and the ultimate ſucceſs of it was thereby, in all probability, diſappointed.

FOREIGN.

Dr. Beddoes' Medical Pneumatic Institution.

ALL who wiſh well to the intereſts of humanity, will rejoice to learn that this inſtitution, as uſeful as novel, is at laſt ſo far eſtabliſhed, that there is every reaſonable ground to believe the objects of it will now receive that ample and fair inveſtigation their importance demands. The learned, ingenious, and meritoriouſly perſevering founder of it, has already publiſhed a *Notice of Obſervations made at the Inſtitution*, which contains ſome highly intereſting remarks on the effects of a gas not before applied to medicine, but which promiſes, in ſkilful hands, to be one of the ſafeſt and moſt powerful agents hitherto diſcovered.

Mr. Davy, ſuperintendant of the inſtitution, than whom it would hardly be poſſible to find one better qualified for the ſituation, having made ſome experiments on *dephlogiſticated nitrous gas*, ſo named by its diſcoverer, Dr. Prieſtley, which proved that its compoſition, properties, and mode of action,

had been miſtaken by the lateſt experimenters, was induced to inhale it. Dr. Beddoes relates the circumſtances in the following words:

"The firſt inſpirations of the gas produced giddineſs, fulneſs of the head, and, in ſhort, feelings reſembling thoſe of incipient intoxication, but unaccompanied by pleaſurable ſenſation. At this next experiment I was preſent. The quantity was larger, and the gas more pure. The ſcene exhibited was the moſt extraordinary I had ever witneſſed, except in the caſe of that epileptic patient, whom I have deſcribed (*Conſiderations on Airs*, part iv. p. 13) as agitated, in conſequence of the reſpiration of oxygen gas, with a long ſucceſſion of the moſt violent movements. The two ſpectacles differed, indeed, eſſentially, in one reſpect. In the former every thing was alarming: in the latter, after the firſt moments of ſurpriſe, it was impoſſible not to recognize the expreſſions of the moſt ecſtatic pleaſure. I find it entirely out of my power to paint the appearances, ſuch as they exhibited themſelves to me. I ſaw and heard ſhouting, leaping, running; and other geſtures, which may be ſuppoſed to be exhibited by a perſon who gives full looſe to feelings excited by a piece of joyful and unlooked-for news. As in the caſe of the epileptic patient, *no wearineſs or depreſſion followed*; ſo, in this caſe, *no exhauſtion, or languor, or uneaſy feeling took place.* The experiment Mr. Davy has very frequently repeated, and, generally, with the higheſt pleaſurable ſenſations; and, except under particular circumſtances, with conſiderable muſcular exertions, which have not, in any inſtance, been ſucceeded by fatigue or ſadneſs."

A number of perſons afterwards inhaled the ſame gas. The following extracts will convey ſome idea of the very ſingular effects produced by it.

"Mr. J. W. Tobin (after the firſt imperfect trials), when the air was pure, experienced ſometimes ſublime emotions, with tranquil geſtures—ſometimes violent muſcular action, with ſenſations indeſcribably exquiſite—no ſubſequent debility—no exhauſtion.—His trials have been very numerous. Of late he has felt only ſedate pleaſure. In Mr. Davy the effect is not diminiſhed.

"Mrs. Beddoes. Pretty uniform pleaſurable ſenſations—propenſity to muſcular exertion—could walk much better up Clifton-Hill—has frequently ſeemed to be aſcending like a balloon, a feeling which Mr. Burnet ſtrongly expreſſed.

"Mr. James Thomſon. Involuntary laughter—thrilling

in his toes and fingers—exquiſite ſenſations of pleaſure—a pain in the back and knees, occaſioned by fatigue the day before, recurred a few minutes afterwards. A ſimilar obſervation we think we have made on others; and we impute it to the undoubted power of the gas to increaſe the ſenſibility, or nervous power, beyond any other agent, and probably in a peculiar manner.

"Mr. Stephen Hammick, ſurgeon of the Royal Hoſpital, Plymouth. In a ſmall doſe, yawning and languor.—It ſhould be obſerved, that the firſt ſenſation has often been diſagreeable, as giddineſs; and a few perſons, previouſly apprehenſive, have left off inhaling as ſoon as they felt this.—Two larger doſes produced a glow, unreſtrainable tendency to muſcular action, high ſpirits, and more vivid ideas.

"Mrs. Barbauld, *the children's friend.* At firſt pleaſurable ſenſations, occaſioning involuntary laughter—ſome momentary faintneſs afterwards.—We now underſtood the regulation of the doſe, ſo as, perhaps, to be able to remove Mr. Barbauld's languor, and to give Mrs. Barbauld the pleaſure, without the tranſitory faintneſs.

"Mr. William Clayfield has moſt reſiſted the effects of the gas. Pretty ſtrong doſes produced a tranſitory intoxication. In two inſtances, very large doſes have excited the violent muſcular orgaſm, accompanied with exquiſite pleaſure, and followed by no debility.

"Mr. Robert Southey could not diſtinguiſh between the firſt effects and an apprehenſion, of which he was unable to diveſt himſelf. His firſt definite ſenſations were, a fulneſs and dizzineſs in the head, ſuch as to induce fear of falling. This was ſucceeded by a laugh, which was involuntary, but highly pleaſurable, accompanied with a peculiar thrilling in the extremities—a ſenſation perfectly new and delightful. For many hours after this experiment, he imagined that his taſte and ſmell were more acute, and is certain that he felt unuſually ſtrong and cheerful. In a ſecond experiment he felt pleaſure ſtill ſuperior, and has ſince poetically remarked, that he ſuppoſes the atmoſphere of the higheſt of all poſſible heavens to be compoſed of this gas.

"Robert Kingleake, M. D. Additional freedom and power of reſpiration, ſucceeded by an almoſt delirious, but highly pleaſurable ſenſation in the head, which became univerſal, with increaſed tone of the muſcles. At laſt an intoxicating placidity abſorbed, for five minutes, all voluntary power, and left a cheerfulneſs and alacrity for ſeveral hours. A ſecond

ſtronger doſe produced a perfect *trance* for about a minute; then a glow pervaded the ſyſtem. The permanent effects were, an invigorated feeling of vital power and improved ſpirits. By both trials, particularly by the former, old rheumatic feelings ſeemed to be revived for the moment.

"Mr. Wedgwood, after breathing ſome time, threw the bag from him, kept breathing on laborioufly with an open mouth, holding his noſe with his left hand,* without power to take it away, though aware of the ludicrouſneſs of his ſituation. All his muſcles ſeemed to be thrown into vibratory motion—he had a violent inclination to make antic geſtures—ſeemed lighter than the atmoſphere, and as if about to mount. Before the experiment he was a good deal fatigued, after a very long ride, of which he permanently loſt all ſenſe. In a ſecond experiment, nearly the ſame effects, but with leſs pleaſure. In a third, much greater pleaſure."

After ſome time Dr. Beddoes tried the effects of the gas in his own perſon, and we ſhall quote the account of his feelings:—

"The firſt ſenſations had nothing unpleaſant; the ſucceeding have been agreeable beyond his conception or belief, even after the rapturous deſcriptions he had heard, and the eagerneſs to repeat the inhalation which he had ſo often witneſſed. He ſeems to himſelf, at the time (for why ſhould one fear to uſe ludicrous terms when they are expreſſive?) to be bathed all over with a bucket full of good humour; and a placid feeling pervades his whole frame. The heat of the cheſt is much greater from a ſmall doſe than he ever felt from the largeſt quantity of oxygen. A conſtant fine glow, which affects the ſtomach, led him one day to take an inconvenient portion of food, and to try the air afterwards. It very ſoon removed the ſenſe of diſtention, and, he ſuppoſes, expedited digeſtion. He has never tried to bring on the high orgaſm, but has generally felt more alacrity at the moment—not one languid, low, *crapulary* feeling afterwards. It occurred to him that, under a certain adminiſtration of this gas, ſleep might poſſibly be diſpenſed with—he is ſure that from leſs ſleep he derives more refreſhment than for many years paſt. And his morning alertneſs equals that of a healthy boy."

The caſes in which its effects were prejudicial are alſo ſtated with great candour. Theſe were of the hyſterical kind. But the conſideration of the whole of theſe phenomena led

* This was practiſed in all the experiments.

to a happy application of the gas to the cure of palſy, and of diſeaſes proceeding from a defect of nervous energy; and ſeveral inſtances of ſucceſs are ſtated, which are well deſerving of attention.

"We deſire further," ſays the author, "to try the effects of our new agent in palſy, and in the various caſes of *true* deficiency of nervous power, which we have well learned to diſtinguiſh from caſes of relative defect of irritable power. As the limits of the efficacy of every remedy ought to be determined, we ſhall not ſhrink from any caſe by reaſon of its inveteracy. We intend to oppoſe our Nepenthe to the equable decay induced by time and intemperance; and we hope to palliate ſome of the evils of extreme old age itſelf.

"We are emboldened, by experience, to pledge ourſelves for the ſafe employment of the gas. We ſhall, indeed, be ſadly diſappointed, if it does not ſometimes prove the moſt delicious of luxuries, as well as the moſt ſalutary of remedies. In ſaying this, it may be allowed me to ſuggeſt to thoſe who have not attended to the tenor of my opinions, that I now, for the firſt time, venture to hold forth theſe hopes. However urgently I may have recommended the inveſtigation, my language, with regard to its iſſue, has always been, that *I would not anſwer for the diſcovery of a gaſeous remedy in any denomination whatever of diſeaſe. That natural or forced decay may be repaired, and the faculty of pleaſurable ſenſation renovated,* is now no longer mere conjecture, ſupported by looſe analogies—we ſee the ſtrongeſt probabilities daily accumulating in favour of the opinion. It muſt only be remembered, that ſo deſirable a change cannot be effected by the agent, applied in *any* manner, to *any* conſtitution. It muſt be *properly* uſed in *proper* caſes.

"Conſidering the preſent abundance of expert chemiſts, we cannot preſume that others will not be able to prepare the gas perfectly without our inſtructions. Nevertheleſs, thoſe who attempt to uſe it medicinally ſhould be apprized that the utmoſt care is neceſſary in its preparation and employment. A deleterious, inſtead of a ſalutary fluid, as the author can atteſt from his own painful experience, may eaſily be obtained. Probably neither Dr. Prieſtley, nor the Dutch chemiſts, ever procured that which can be reſpired with ſafety. The difference, and its cauſes, will hereafter be pointed out.

"If, therefore, in conſequence of that promptitude which journals afford, experiments, tending to invalidate any part of

the preceding ſtatement, ſhould be publiſhed, we hope that its perfect fidelity will not, on that account, be doubted. The experimenter will be found to have employed a different agent from ours. This we have no heſitation in declaring that we ſhall be able to ſhew."

[*Phil. Mag. and Mon. Rev. for Dec.* 1799.

Artificial Cold.

A method has been lately diſcovered of producing a degree of artificial cold, much more intenſe than was ever before known. It conſiſts in the ſimple mixture of ſulphuric and muriatic ether; an inſtantaneous evaporation takes place at the moment of union, accompanied by ſo rapid an abſorption of heat, as not only to congeal mercury, but even to reduce the gaſeous nitrous acid to a liquid form.

[*Lond. Monthly Mag. No.* 55, *p.* 59.

Anasarcous Inflammation *of the* lower Extremities.

Dr. Ferriar, of Mancheſter, has uſed the infuſion of *digitalis*, as a lotion, with remarkable ſucceſs, in the inflammatory affection accompanying anaſarca of the inferior extremities. As this ſpecies of inflammation has hitherto proved intractable, he wiſhes to communicate a knowledge of the method of cure without delay.

[*Monthly Rev. for Nov.* 1799, *p.* 360.

END OF VOLUME III.

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